BEFORE THE

RHODE ISLAND PUBLIC UTILITIES COMMISSION

PREPARED DIRECT TESTIMONY

OF

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PRINCIPAL
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CONCERNING

FAIR RATE OF RETURN

RE: UNITED WATER RHODE ISLAND, INC.

JUNE 2011

TABLE OF CONTENTS

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS ADDRESS.

A. My name is Pauline M. Ahern. I am a Principal of AUS Consultants. My business address is 155 Gaither Drive, Suite A, Mt. Laurel, New Jersey 08054.

Q. PLEASE SUMMARIZE YOUR PROFESSIONAL EXPERIENCE AND EDUCATIONAL BACKGROUND.

A. I have offered expert testimony on behalf of investor-owned utilities before twenty-five state regulatory commissions on rate of return issues, including but not limited to common equity cost rate, fair rate of return, capital structure issues, credit quality issues and the like. I am a graduate of Clark University, Worcester, MA, where I received a Bachelor of Arts degree with honors in Economics in 1973. In 1991, I received a Master of Business Administration with high honors and a concentration in finance from Rutgers University. The details of these appearances and my educational background, presentations I have given as well as articles I have co-authored are shown in Appendix A supplementing this testimony.

On a monthly basis, I also calculate and maintain the American Gas Association (A.G.A.) Gas Index under contract with the A.G.A., which serves as the benchmark against which the performance of the American Gas Index Fund (AGIF) is measured. The A.G.A. Gas Index and AGIF are a market capitalization weighted indices and fund, respectively, comprised of the common stocks of the publicly traded corporate members of the A.G.A.

I am also the Publisher of AUS Utility Reports, responsible for supervising the production, publication, distribution and marketing of its various reports.

I am a member of the Society of Utility and Regulatory Financial Analysts (SURFA) where I serve on its Board of Directors, having served two terms as President, from 2006 – 2008 and 2008 – 2010. Previously, I held the position of Secretary/Treasurer from 2004 – 2006. In 1992, I was awarded the professional designation "Certified Rate of Return Analyst" (CRRA) by SURFA, which is based upon education, experience and the successful completion of a comprehensive written examination.

I am also an associate member of the National Association of Water Companies, serving on its Finance/Accounting/Taxation Committee; a member of the Energy Association of Pennsylvania, formerly the Pennsylvania Gas Association; and a member of the American Finance and Financial Management Associations.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose is to provide testimony on behalf of United Water Rhode Island, Inc. (UWRI or the Company) relative to the appropriate overall rate of return, including common equity cost rate, long-term debt cost rate and capital structure which it should be afforded the opportunity to earn on its jurisdictional rate base.

Q. HAVE YOU PREPARED AN EXHIBIT WHICH SUPPORTS YOUR RECOMMENDED FAIR RATE OF RETURN?

A. Yes. It has been marked for identification as Exhibit No. __ and consists of Schedules PMA-1 through PMA-12.

II. SUMMARY

Q. WHAT IS YOUR RECOMMENDED OVERALL FAIR RATE OF RETURN?

A. I recommend that the Rhode Island Public Utilities Commission (RI PUC or the

Commission) authorize the Company the opportunity to earn an overall rate of return of 8.74% based upon the consolidated capital structure at March 31, 2011 of United Waterworks, Inc. (UWW or the Parent), which consisted of 47.53% long-term debt and 52.47% common equity at a long-term debt cost rate of 6.15%, and my recommended common equity cost rate of 11.10%. The overall rate of return is summarized in Table 1 below:

Table 1

Type of Capital	Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	47.53%	6.15%	2.92%
Common Equity	52.47	11.10	5.82
Total	100.00%		8.74%

Q. PLEASE SUMMARIZE YOUR RECOMMENDED COMMON EQUITY COST RATE.

A. My recommended common equity cost rate of 11.10% is summarized on Schedule PMA-1, page 2. Because UWRI's common stock is not publicly traded, a market-based common equity cost rate cannot be determined directly for the Company. Consequently, in arriving at my recommended common equity cost rate of 11.10%, I have assessed the market-based common equity cost rates of companies of relatively similar, but not necessarily identical risk, i.e., proxy group(s) for insight into a recommended common equity cost rate applicable to UWRI and suitable for cost of capital purposes. Using other utilities of relatively comparable similar risk as proxies is consistent with the principles of fair rate of return established in the Hope[1] and

[1] Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 591 (1944).

Bluefield[2] cases, adding reliability to the informed expert judgment necessary to arrive at a recommended common equity cost rate. However, no proxy group(s) can be selected to be identical in risk to UWRI. Therefore, the proxy group(s)' results must be adjusted, if necessary, to reflect the unique relative financial and/or business risk of the Company, as will be discussed in detail subsequently.

Consistent with the Efficient Market Hypothesis (EMH), which will be discussed in more detail below, my recommendation results from the application of four well-tested market-based cost of common equity models, the Discounted Cash Flow (DCF) approach, the Risk Premium Model (RPM), the Capital Asset Pricing Model (CAPM), and the Comparable Earnings Model (CEM).

The results derived from each are as follows:

[2] Bluefield Water Works Improvement Co. v. Public Serv. Comm'n, 262 U.S. 679 (1922).

Table 1

	Proxy Group of Eight Water Companies
Discounted Cash Flow Model	9.81%
Risk Premium Model	10.61
Capital Asset Pricing Model	10.26
Comparable Earnings Model	14.50
Indicated Common Equity Cost Rate Before Adjustment for Financial Risk and Business Risk	10.75%
Financial Risk Adjustment	(0.21)
Business Risk Adjustment due to Small Size	0.55
Indicated Common Equity Cost Rate After Adjustment	11.09%
Recommended Common Equity Cost Rate	11.10%

After reviewing the cost rates based upon the four models, I conclude that a common equity cost rate of 11.10% is indicated based upon the application of all four models to the market data of the proxy group of eight water companies before any adjustment for financial risk and/or business risk. The indicated common equity cost rate based upon the eight water companies was adjusted downward by 21 basis points (0.21%) to reflect UWRI's lower financial risk relative to the eight water companies, and upward by 55 basis points (0.55%) to reflect UWRI's increased business risk due to its smaller size relative to the eight water companies. All of these adjustments will be discussed subsequently. After these adjustments, the financial risk- and business risk-adjusted common equity cost rate is 11.09% for the water company proxy group,

which when rounded to 11.10 % is my recommended common equity cost rate for UWRI.

III. GENERAL PRINCIPLES

Q. WHAT GENERAL PRINCIPLES HAVE YOU CONSIDERED IN ARRIVING AT YOUR RECOMMENDED COMMON EQUITY COST RATE OF 11.10%?

A. In unregulated industries, the competition of the marketplace is the principal determinant of the price of products or services. For regulated public utilities, regulation must act as a substitute for marketplace competition. Assuring that the utility can fulfill its obligations to the public while providing safe and adequate service at all times requires a level of earnings sufficient to maintain the integrity of presently invested capital as well as permitting the attraction of needed new capital at a reasonable cost in competition with other firms of comparable risk, consistent with the fair rate of return standards established by the U.S. Supreme Court in the previously cited Hope and Bluefield cases. Consequently, marketplace data must be relied upon in assessing a common equity cost rate appropriate for ratemaking purposes. Therefore, my recommended common equity cost rate is based upon marketplace data for utilities as similar in risk as possible to UWRI, based upon selection criteria which will be discussed subsequently. Just as the use of the market data for the proxy groups adds reliability to the informed expert judgment used in arriving at a recommended common equity cost rate, the ability to use multiple common equity cost rate models also adds reliability when arriving at a company-specific common equity cost rate.

IV. BUSINESS RISK

Q. PLEASE DEFINE BUSINESS RISK AND EXPLAIN WHY IT IS IMPORTANT TO THE DETERMINATION OF A FAIR RATE OF RETURN.

A. Business risk is the riskiness of a company's common stock without the use of debt and/or preferred capital. Examples of such general business risk to all utilities, i.e., water, electric and natural gas distribution, include the quality of management, the regulatory environment, customer mix and concentration of customers, service territory growth, capital intensity, size, and the like, which have a direct bearing on earnings.

Business risk is important to the determination of a fair rate of return because the greater the level of risk, the greater the rate of return investors demand, consistent with the basic financial precept of risk and return.

Q. PLEASE DISCUSS THE BUSINESS RISKS FACING THE WATER INDUSTRY IN GENERAL.

A. Water is essential to life and unlike electricity or natural gas, water is the only utility product which is ingested. Consequently, water quality is of paramount importance to the health and well-being of customers and subject to additional health and safety regulations. In addition, unlike many electric and natural gas utilities, water companies serve a production function in addition to the delivery functions served by electric and gas utilities.

Water utilities obtain supply from wells through aquifers or surface water reservoirs, streams and rivers, or through water rights. Throughout the years, well supplies and aquifers have been threatened, with historically minor purification treatment giving way to major well rehabilitation, treatment or replacement.

Simultaneously, environmental water quality standards have tightened considerably, requiring multiple treatments. In addition, drought, water source overuse, runoff, threatened species/habitat protection and other factors are limiting supply availability. As for water rights, their lives are typically finite with renewability uncertain. In the course of procuring water supplies and treating water so that it meets Safe Drinking Water Act standards, water utilities have an ever-increasing responsibility to be stewards of the environment from which supplies are drawn, in order to preserve and protect the natural resources of the United States.

Moreover, electric and natural gas companies, where transmission and distribution is separate from generation, generally do not produce the electricity or natural gas which they transmit and distribute. In contrast, water utilities are typically vertically engaged in the entire process of acquiring supply, production (treatment) and distribution of water. Hence, water utilities require significant capital investment in sources of supply and production (wells and treatment facilities), in addition to transmission and distribution systems, both to serve additional customers and to replace aging systems, creating a major risk facing the water and wastewater utility industry.

Value Line Investment Survey[3] (Value Line) observes the following about the water utility industry:

> The recent earnings momentum is probably not sustainable, however. Growth will likely slow considerably for most, as growing infrastructure expenses and the costs associated with them (see below) are poised to erase the benefits of the top-line advances mentioned above and pressure

[3] Value Line Investment Survey, January 21, 2011.

margins. Water systems in the United States are aging and demand tremendous capital investment to be repaired or replaced in order to adequately meet EPA and state guidelines.

Even still, the group does have its merits. The income component that accompanies most stocks here provides some stability, a welcomed component in times of economic uncertainty, which we continue to endure. As such, some of the water utility offerings have continued to trade upwards since our October review and the group, as a whole, still ranks towards the top of the *Value Line Investment Survey* for Timeliness.

* * *

There is no question, water is one of, if not, the most essential parts of life. It is a necessary part of nearly every creature and plants [sic] diet, and thus is in the highest demand. As such, delivery of this liquid is almost as crucial, with water utilities responsible for safe and timely delivery of water to millions of Americans daily. Absent a miraculous discovery, demand for water will continue to grow along with the population, creating the most opportune operating environment for providers in this space.

* * *

Even with more friendly state regulators in place, the industry has some issues threatening to pressure profits. Infrastructures are decaying rapidly and, in many cases, need complete overhauls. The costs to make the repairs are astronomical and many operating in this space do not have the funds on hand to foot the bill. Indeed, most are strapped for cash and will have to look to outside financiers to keep up. Although consolidation trends present unique opportunities for those with the financial capabilities to throw their hat in the ring, such as *Aqua America*, others are just trying to stay afloat. Unfortunately the financing costs to stay in business, whether it be additional share or debt offerings, will probably drown most and dilute shareholder gains moving ahead.

In addition, because the water and wastewater industry is much more capital-intensive than electric, natural gas or telephone industries, the investment required to produce a dollar of revenue is greater. For example, as shown on page 1 of Schedule PMA-2, it took $3.83 of net utility plant on average to produce $1.00 in operating revenues in

2010 for the water utility industry as a whole. For UWRI specifically, it took $5.10 of net utility plant to produce $1.00 in operating revenues in 2010. In contrast, for electric, combination electric and gas and natural gas utility industries, on average it took only $2.10, $1.70 and $1.20, respectively, to produce $1.00 in operating revenues in 2010. The greater capital intensity of water utilities is not a new phenomenon as water utilities have exhibited a consistently and significantly greater capital intensity relative to electric, combination electric and gas and natural gas utilities during the ten years ended 2010 as shown on page 2 of Schedule PMA-2. As financing needs have increased over the last decade, the competition for capital from traditional sources has increased, making the need to maintain financial integrity and the ability to attract needed new capital increasingly important. And, because investor-owned water and wastewater utilities typically do not receive federal funds for infrastructure replacement, the challenge to investor-owned water and wastewater utilities is exacerbated and their access to financing is restricted, thus increasing risk.

NARUC has also highlighted the challenges facing the water and wastewater industry stemming from its capital intensity. NARUC's Board of Directors adopted a resolution in July 2006, taking the position that[4]:

> WHEREAS, To meet the challenges of the water and wastewater industry which may face a combined capital investment requirement nearing one trillion dollars over a 20-year period, the following policies and mechanisms were identified to help ensure sustainable practices in promoting needed capital investment and cost-effective rates: a) the use of prospectively relevant test years; b) the distribution system improvement charge; c) construction work in progress; d) pass-through adjustments; e) staff-assisted rate cases; f) consolidation to achieve economies of scale; g) acquisition adjustment policies to promote

[4] "Resolution Supporting Consideration of Regulatory Policies Deemed as 'Best Practices'", Sponsored by the Committee on Water. Adopted by the NARUC Board of Directors, July 27, 2006.

consolidation and elimination of non-viable systems; h) a streamlined rate case process; i) mediation and settlement procedures; j) defined timeframes for rate cases; k) integrated water resource management; l) a fair return on capital investment; *and* m) improved communications with ratepayers and stakeholders; *and*

WHEREAS, Due to the massive capital investment required to meet current and future water quality and infrastructure requirements, adequately adjusting allowed equity returns to recognize industry risk in order to provide a fair return on invested capital was recognized as crucial...

RESOLVED, That the National Association of Regulatory Utility Commissions (NARUC), convened in its July 2006 Summer Meetings in Austin, Texas, conceptually supports review and consideration of the innovative regulatory policies and practices identified herein as "best practices;" *and be it further*

RESOLVED, That NARUC recommends that economic regulators consider and adopt as many as appropriate of the regulatory mechanisms identified herein as best practices...

UWRI itself is facing an expected "massive capital investment" as it projects net capital expenditures of $12,356,100 for the five and one-half years ending 2016, representing an increase of approximately 82% over 2010 net plant of $15,124,569.

The water and wastewater utility industry also experiences lower relative depreciation rates. Lower depreciation rates, as one of the principal sources of internal cash flows for all utilities, mean that water and wastewater utility depreciation as a source of internally-generated cash is far less than for electric, natural gas or telephone utilities. Water and wastewater utilities' assets have longer lives and, hence, longer capital recovery periods. As such, water and wastewater utilities face greater risk due to inflation which results in a higher replacement cost per dollar of net plant than for other types of utilities. As shown on page 3 of Schedule PMA-2, water utilities experienced an average depreciation rate of 3.0% for 2010 with UWRI experiencing a

much lower rate of 2.1%. In contrast, in 2010, electric, combination electric and gas and natural gas experienced average depreciation rates of 4.1%, 3.7% and 3.3%, respectively.

As with capital intensity, the lower relative depreciation rates of water utilities is not a new phenomenon. As shown on page 4 of Schedule PMA-2, water utility depreciation rates have been consistently and significantly lower than those of the electric, combination electric and gas and natural gas utilities. Such low depreciation rates signify that the pressure on cash flows remains significantly greater for water utilities than for other types of utilities.

In addition, not only is the water utility industry historically capital intensive, it is expected to incur significant capital expenditure needs over the next 20 years. Prior to the recent economic and capital market turmoil, Standard & Poor's (S&P) noted[5]:

> Standard & Poor's expects the already capital-intensive water utility industry to become even more so over the next several years. Due to the aging pipeline infrastructure and more stringent quality standards, the U.S. Environmental Protection Agency's (EPA) foresees a need for $277 billion to upgrade and maintain U.S. water utilities through 2022, with about $185 billion going toward infrastructure improvements. In addition, about $200 billion will be needed for wastewater applications, which suggests increased capital spending to be a long-term trend in this industry.
>
> In line with these trends, many companies have announced aggressive capital spending programs. Forecast capital spending primarily focuses on infrastructure replacements and growth initiatives. Over the past five years, capital spending has been equivalent to about three times its depreciation expense. However, companies are now forecasting spending to be at or above four times depreciation expense over the intermediate term. For companies in regulatory jurisdictions that provide timely cost recovery for capital expenditures, the increased spending is likely to have

[5] Standard & Poor's, Credit Outlook For U.S. Investor-Owned Water Utilities Should Remain Stable in 2008 (January 31, 2008) 2, 4.

a minimal effect on financial metrics and ratings. However, companies in areas without these mechanisms, earnings, and cash flow could be negatively affected by the increased spending levels, which over the longer term could harm a company's overall credit profile.

Due to the high level of capital spending, U.S. investor-owned water utilities do not generate positive free cash flow. This, coupled with the forecast increase in capital spending over the intermediate term, will require additional access to capital markets. We expect rated water companies to have enough financial flexibility to gain that access. Ratings actions shouldn't result from this increased market activity because we expect companies to use a balanced financing approach, which should maintain debt near existing levels.

Specifically, the EPA states the following[6]:

> The survey found that the total nationwide infrastructure need is $334.8 billions for the 20-years period from January 2007 through December 2026. With $200.8 billion in needs over the next 20 years, transmission and distribution projects represent the largest category of need. This result is consistent with the fact that transmission and distribution mains account for most of the nation's water infrastructure. The other categories, in descending order of need are: treatment, storage, source and a miscellaneous category of needs called "other". The large magnitude of the national need reflects the challenges confronting water systems as they deal with an infrastructure network that has aged considerably since these systems were constructed, in many cases, 50 to 100 years ago.

In its 2009 infrastructure Fact Sheet[7] published by the American Society of Civil Engineers (ASCE) they state:

> America's drinking water systems face an annual shortfall of at least $11 billion to replace aging facilities that are near the end of their useful lives and to comply with existing and future federal water regulations. This does not account for growth in the demand for drinking water over the next 20 years. Leaking pipes lose an estimated 7 billion gallons of clean drinking water a day.

Water utility capital expenditures as large as projected by the EPA and ASCE

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[6] "Fact Sheet: "EPA's 2007 Drinking Water Infrastructure Needs Survey and Assessment", United States Environmental Protection Agency, Office of Water, February 2009, 1.

[7] 2009 American Society of Civil Engineers, Report Card for America's Infrastructure 2009.

will require significant financing. The three sources typically used for financing are debt, equity (common and preferred) and cash flow. All three are intricately linked to the opportunity to earn a sufficient rate of return as well as the ability to achieve that return. Consistent with the *Bluefield* and *Hope* decisions discussed previously, the return must be sufficient enough to maintain credit quality as well as enable the attraction of necessary new capital, be it debt or equity capital. If unable to raise debt or equity capital, the utility must turn to either retained earnings or free cash flow, both of which are directly linked to earning a sufficient rate of return. If either are inadequate, it will be nearly impossible for the utility to invest in needed infrastructure. Since all utilities typically experience negative free cash flows, it is clear that an insufficient rate of return can be financially devastating for utilities and for its customers, the ratepayers. Page 5 of Schedule PMA-2 demonstrates that the free cash flows (funds from operations minus capital expenditures) of water utilities as a percent of total operating revenues has been consistently and more negative than that of electric, combination electric and gas and natural gas utilities for the ten years ended 2010. Magnifying the impact of water utilities' negative free cash flow position is a continued inability to achieve what may already be an insufficient authorized rate of return on common equity as will be discussed subsequently.

Consequently, as with the previously discussed capital intensity and depreciation rates, significant capital expenditures relative to net plant as well as the consistently and more significantly negative free cash flow relative to operating revenues of water utilities indicates greater investment risk for water utilities relative to electric, combination electric and gas and natural gas utilities.

In view of the foregoing, it is clear that the water and wastewater utility industry's high degree of capital intensity, low depreciation rates and significant negative free cash flow, coupled with the need for substantial infrastructure capital spending, requires regulatory support in the form of adequate and timely rate relief, as recognized by NARUC, so water and wastewater utilities will be able to successfully meet the challenges they face.

Q. ARE THERE OTHER INDICATIONS THAT THE WATER UTILITY INDUSTRY EXHIBITS MORE INVESTMENT RISK THAN THE ELECTRIC, COMBINATION ELECTRIC AND GAS AND NATURAL GAS UTILITY INDUSTRIES?

A. Yes. Schedule PMA-3 presents several such indications: total debt / earnings before interest, taxes, depreciation and amortization (EBITDA); funds from operations (FFO) / total debt; funds from operations / interest coverage; before-income tax / interest coverage; earned ROEs and earned v. authorized ROEs for each utility industry for the ten years ended 2010. The increasing proportion of total debt to EBITDA for the water utilities indicates significantly increasing and greater financial risk for water utilities, which began the most recent ten years below that of electric, combination electric and gas and natural gas utilities.

As noted previously, S&P evaluates total debt as a percentage of EBITDA and FFO as a percentage of debt in the bond / credit rating process. Page 1 of Schedule PMA-3 shows that total debt / EBITDA has risen steadily for water utilities for the ten years ended 2010, dropping only slightly for 2010. Notwithstanding the decline in 2010, total debt / EBITDA is now higher than that for electric, combination electric

and gas and natural gas utilities. Page 2 shows that FFO / total debt has steadily declined for water utilities over the decade ending 2010, while rising for the other utility groups. The consistently low level of FFO / total debt for the water utilities, is a further indication of the pressures upon water utility cash flows and the increased relative investment risk which the water utility industry faces.

Pages 3 and 4 of Schedule PMA-3 confirm the pressures upon both cash flows and income faced by water utilities. Page 2 shows that FFO / interest coverage for water, electric, combination electric and gas and natural gas utilities followed a similar pattern to FFO interest coverage for the ten years ended 2010. FFO interest coverage remained relative consistent for water utilities, rising and falling between 2.0 and 3.0 times during the period. A similar pattern was exhibited by electric utilities. However, FFO / total debt for combination electric and gas as well as natural gas utilities rose during the ten years, exceeding that of water utilities significantly in 2009 and dropping back somewhat in 2010. Page 4 shows that before-income tax coverage interest coverage for water utilities also remained relatively stable, falling below that of gas utilities in 2002 and below that of electric and combination electric and gas utilities between 2005 and 2006, where it remained for the remainder of the ten years. In 2010, in all likelihood due to the "Great Recession" and the economy's currently nascent, fragile recovery from it, before-income tax interest coverage for water, electric and combination electric and gas utilities has converged at slightly lower than 3.0 times, while natural gas utilities continue to enjoy a significantly greater before-income tax interest coverage of approximately 4.25 times in 2010. Once again, the consistency and relatively low level of interest coverage ratios for water utilities are further indications

of the pressures upon cash flow which water utilities face, confirming greater investment risk for water utilities relative to electric, combination electric and gas and natural gas utilities.

A final indication of the relative investment risk of water utilities compared with electric, combination electric and gas and natural gas utilities, are trends in earned and authorized ROEs. As shown on page 5 of Schedule PMA-3, earned ROEs, on average, for water utilities have generally been below those of electric, combination electric and gas and natural gas utilities during the ten years ended 2010. They have consistently been lower for the last five years. However, such a comparison would not be complete without a comparison of earned ROEs with authorized ROEs, as shown on pages 6 and 7 of Schedule PMA-3. The authorized ROEs are those reported in AUS Utility Reports for the last month of each year representing the authorized ROEs in effect during the previous year, rather than the outcomes of rate cases decided during the year. Hence, these authorized ROEs represent the revenue requirements of each year which give rise to the earned ROEs in each year. Water utilities generally, consistently and dramatically earned far below their authorized ROEs, while electric and combination electric and gas earned above their authorized ROEs in some years and below in others. In contrast, natural gas utilities generally, consistently and dramatically earned above their authorized ROEs. Notwithstanding the closing of the gap between the average authorized ROEs for the various utility groups over the ten year period, for the majority of the period, water utilities have failed to earn their average authorized ROE with earned ROEs significantly lower than authorized, a likely contributing factor to the greater risk indicated by the previously discussed coverage

metrics.

In view of all of the foregoing, it is clear that the investment risk of water utilities, has increased over the most recent ten years and that water utilities currently face greater investment risk relative to electric, combination electric and gas and natural gas utilities.

Q. DOES UWRI FACE ADDITIONAL EXTRAORDINARY BUSINESS RISKS?

A. Yes. It faces additional extraordinary business risk due to its smaller size relative to the proxy group because, all else equal, size has a bearing on risk as will be discussed subsequently. It is clear, too, that on a relative basis, water utilities on average are smaller in terms of market capitalization than electric, combination electric and gas and natural gas utilities as demonstrated on page 5 of Schedule PMA-3, which shows the market capitalization of each utility group for the ten years ended 2010.

Q. PLEASE EXPLAIN WHY SIZE HAS A BEARING ON BUSINESS RISK.

A. It is conventional wisdom, supported by actual returns over time that smaller companies tend to be more risky causing investors to expect greater returns as compensation for that risk. Smaller companies are simply less able to cope with significant events which affect sales, revenues and earnings. For example, in general, the loss of revenues from a few larger customers, for example, would have a greater effect on a small company than on a much larger company with a larger, more diverse, customer base. Moreover, smaller companies are generally less diverse in their operations as well as experiencing less financial flexibility. In addition, the effect of extreme weather conditions, i.e., prolonged droughts or extremely wet weather, will have a greater affect upon a small operating water utility than upon the much larger,

more geographically diverse holding companies.

Further evidence of the risk effects of size include the fact that investors demand greater returns to compensate for the lack of marketability and liquidity of the securities of smaller firms. That it is the use of funds invested and not the source of those funds which gives rise to the risk of any investment is a basic financial principle[8]. Therefore, because UWRI is the regulated utility to whose jurisdictional rate base the Commission's ultimately allowed overall cost of capital will be applied, the relevant risk reflected in the cost of capital must be that of UWRI, including the impact of its small size on common equity cost rate. As will be discussed subsequently, UWRI is smaller than the average proxy group company based upon the results of a study of the market capitalization of the eight water companies as shown on Schedule PMA-12.

In addition, Brigham[9] states:

> A number of researchers have observed that portfolios of small-firms have earned consistently higher average returns than those of large-firms stocks; this is called "small-firm effect." On the surface, it would seem to be advantageous to the small firms to provide average returns in a stock market that are higher than those of larger firms. In reality, it is bad news for the small firm; what *the small-firm effect means is that the capital market demands higher returns on stocks of small firms than on otherwise similar stocks of the large firms.* (italics added)

V. FINANCIAL RISK

Q. PLEASE DEFINE FINANCIAL RISK AND EXPLAIN WHY IT IS IMPORTANT TO THE DETERMINATION OF A FAIR RATE OF RETURN.

A. Financial risk is the additional risk created by the introduction of senior capital, i.e.,

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[8] Brealey, Richard A. and Myers, Stewart C., Principles of Corporate Finance (McGraw-Hill Book Company, 1988) 173 198.

[9] Brigham, Eugene F., Fundamentals of Financial Management, Fifth Edition (The Dryden Press, 1989) 623.

debt and preferred stock, into the capital structure. The higher the proportion of senior capital in the capital structure, the higher the financial risk which must be factored into the common equity cost rate, consistent with the previously mentioned basic financial principle of risk and return, i.e., investors demand a higher common equity return as compensation for bearing higher investment risk.

In May 2009, S&P expanded its Business Risk / Financial Risk Matrix in an effort to augment its independence, strengthen the rating process and increase S&P's transparency to better serve its markets (see page 4 of Schedule PMA-4). S&P initially published its electric, gas, and water utility ratings rankings in a framework consistent with the manner in which it presents its rating conclusions across all other corporate sectors in November 2007. S&P then stated[10]:

> Incorporating utility ratings into a shared framework to communicate the fundamental credit analysis of a company furthers the goals of transparency and comparability in the ratings process.
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> * * *
>
> The utilities rating methodology remains unchanged, and the use of the corporate risk matrix has not resulted in any changes to ratings or outlooks. The same five factors that we analyzed to produce a business risk score in the familiar 10-point scale are used in determining whether a utility possesses an "Excellent," "Strong," "Satisfactory," "Weak," or "Vulnerable" business risk profile.

In May 2009, S&P revised its Business Risk / Financial Risk Matrix with the new business risk/financial risk matrix shown in Table 1 on page 2 of Schedule PMA-4 and financial risk indicative ratios for utilities shown in Table 2 on page 4. Notwithstanding the metrics published in Table 2, S&P states:

> The rating matrix indicative outcomes are what we typically observe – but

[10] Standard & Poor's – Ratings Direct – "U.S. Utilities Ratings Analysis Now Portrayed In The S&P Corporate Ratings Matrix" (November, 30, 2007) 2.

are not meant to be precise indications or guarantees of future rating opinions. Positive and negative nuances in our analysis may lead to a notch higher or lower than the outcomes indicated in the various cells of the matrix.

As shown on Schedule PMA-8, page 2, the average S&P bond rating (issuer credit rating), business risk profile and financial risk profile of the eight water companies are split A+ (A), Excellent and Intermediate with UWRI not rated by either Moody's or S&P.

Q. NEVERTHELESS, CAN THE COMBINED BUSINESS RISKS, I.E., INVESTMENT RISK OF AN ENTERPRISE, BE PROXIED BY BOND AND CREDIT RATINGS?

A. Yes, similar bond ratings/issuer credit (bond/credit) ratings reflect and are representative of similar combined business and financial risks, i.e., total risk faced by bond investors. Although specific business or financial risks may differ between companies, the same bond/credit rating indicates that the combined risks are similar, albeit not necessarily equal, as the purpose of the bond/credit rating process is to assess credit quality or credit risk and not common equity risk. Risk distinctions within S&P's bond rating categories are recognized by a plus or minus, i.e., within the A category, an S&P rating can be at A+, A, or A-. Similarly, risk distinctions for Moody's ratings are distinguished by numerical rating gradations, i.e., within the A category, a Moody's rating can be A1, A2 and A3. For S&P, additional risk distinctions are reflected in the assignment of one of the six business risk profiles and six financial risk profiles, shown in Tables 1 and 2 on pages 2 and 4 of Schedule PMA-4.

In summary, it is clear that S&P's bond/credit rating process encompasses a qualitative analysis of business and financial risks (see page 3 of Schedule PMA-4).

While not a means by which one can specifically quantify the differential in common equity risk between companies, bond/credit ratings provide a useful means with which to compare/differentiate investment risk between companies because it is the result of a thorough and comprehensive analysis of all diversifiable business risks, i.e., investment risk.

VI. UNITED WATER RHODE ISLAND, INC.

Q. HAVE YOU REVIEWED DATA FOR UWRI?

A. Yes. UWRI provides water service to about 19,000 customers in the towns of South Kingstown and Narragansett, Rhode Island. UWRI is a wholly-owned subsidiary of United Waterworks, Inc., which in turn is a wholly-owned subsidiary of United Waterworks, Inc., which in turn is a wholly-owned subsidiary of United Water Resources, Inc. Consequently, the Company's common stock is not publicly traded.

VII. PROXY GROUP

Q. PLEASE EXPLAIN HOW YOU CHOSE THE PROXY GROUP OF EIGHT WATER COMPANIES.

A. The basis of selection for the proxy group was to select those companies which meet the following criteria: 1) they are included in the Water Company Group of AUS Utility Reports (April 2011); 2) they have Value Line, Reuters, Zacks or Yahoo! Finance, consensus five-year EPS growth rate projections; 3) they have a positive Value Line five-year DPS growth rate projection: 4) they have a Value Line adjusted beta; 5) they have not cut or omitted their common dividends during the five years ending 2010 or through the time of the preparation of this testimony; 6) they have 60% or greater of 2010 total operating income derived from and 60% or greater of 2010

total assets devoted to regulated water operations; and 7) at the time of the preparation of this testimony, they had not publicly announced that they were involved in any major merger or acquisition activity.

The following companies met these criteria: American States Water Co., American Water Works Co., Inc., Aqua America, Inc., California Water Service Corp., Connecticut Water Service, Inc., Middlesex Water Company, SJW Corporation and York Water Company.

Q. PLEASE DESCRIBE SCHEDULE PMA-5.

A. Schedule PMA-5 contains comparative capitalization and financial statistics for the eight water companies for the years 2006-2010.

During the five-year period ending 2010, the historically achieved average earnings rate on book common equity for the group averaged 7.87%. The average common equity ratio based upon total permanent capital (excluding short-term debt) was 50.30%, and the average dividend payout ratio was 66.14%.

Total debt as a percent of EBITDA for the years 2006-2010 ranged between 4.31 and 10.12 times, averaging 6.04 times, while funds from operations relative to total debt ranged from 15.17% to 17.88%, averaging 16.81%.

VIII. COMMON EQUITY COST RATE MODELS

A. The Efficient Market Hypothesis (EMH)

Q. PLEASE DESCRIBE THE CONCEPTUAL BASIS OF THE EMH.

A. The EMH, which is the foundation of modern investment theory, was pioneered by Eugene F. Fama[11] in 1970. An efficient market is one in which security prices reflect

[11] Fama, Eugene F., "Efficient Capital Markets: A Review of Theory and Empirical Work" (Journal of Finance, May 1970) 383-417.

all relevant information all the time, with the implication that prices adjust instantaneously to new information, thus reflecting the intrinsic fundamental economic value of a security.[12]

The generally-accepted "semistrong" form of the EMH asserts that all publicly available information is fully reflected in securities prices, i.e., that fundamental analysis cannot enable an investor to "out-perform the market" in the long-run as noted by Brealey and Myers[13]. The "semistrong" form of the EMH is generally held to be true because the use of insider information often enables investors to earn excessive returns by "outperforming the market" in the short-run. This means that all perceived risks and publicly-available information are taken into account by investors in the prices they pay for securities, such as bond/credit ratings, discussions about companies by bond/credit rating agencies and investment analysts as well as the discussions of the various common equity cost rate methodologies (models) in the financial literature. In an attempt to emulate investor behavior, no single common equity cost rate model should be relied upon exclusively in determining a cost rate of common equity and the results of multiple costs of common equity models should be taken into account. In addition, the academic literature provides substantial support for the need to rely upon more than one cost of common equity model in arriving at a recommended common equity cost rate.[14]

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[12] Morin, Roger A., New Regulatory Finance (Public Utility Reports, Inc., 2006) 279-281.

[13] Brealey, Richard A. and Myers, Stewart C., Principles of Corporate Finance First Edition, (McGraw-Hill, 1996) 329.

[14] Morin 428-431.
Brigham, Eugene F. and Gapenski, Louis C., Financial Management – Theory and Practice Fourth Edition, (The Dryden Press, 1985) 256.

Q. ARE THE COST OF COMMON EQUITY MODELS YOU USE MARKET-BASED MODELS, AND HENCE BASED UPON THE EMH?

A. Yes. The DCF model is market-based in that market prices are utilized in developing the dividend yield component of the model. The RPM is market-based in that the bond ratings and expected bond yields used in the application of the RPM reflect the market's assessment of bond/credit risk. In addition, the use of betas to determine the equity risk premium also reflects the market's assessment of market/systematic risk as betas are derived from regression analyses of market prices. The CAPM is market-based for many of the same reasons that the RPM is market-based i.e., the use of expected bond (Treasury bond) yields and betas. The CEM is market-based in that the process of selecting the comparable risk non-utility companies is based upon statistics which result from regression analyses of market prices and reflect the market's assessment of total risk. Therefore, all the cost of common equity models I utilize are market-based models, and hence based upon the EMH.

B. Discounted Cash Flow Model (DCF)

Q. WHAT IS THE THEORETICAL BASIS OF THE DCF MODEL?

A. The theory underlying the DCF model is that the present value of an expected future stream of net cash flows during the investment holding period can be determined by discounting those cash flows at the cost of capital, or the investors' capitalization rate. DCF theory indicates that an investor buys a stock for an expected total return rate which is derived from cash flows received in the form of dividends plus appreciation in market price (the expected growth rate). Mathematically, the dividend yield on market

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Brigham, Eugene F. and Daves, Phillip R., Intermediate Financial Management, (Thomson-Southwestern, 2007) 332-333.

price plus a growth rate equals the capitalization rate, i.e., the total common equity return rate expected by investors.

Q. WHICH VERSION OF THE DCF MODEL DO YOU USE?

A. I utilize the single-stage constant growth DCF model because, in my experience, it is the most widely utilized version of the DCF used in public utility rate regulation. In my opinion, it is widely utilized because utilities are generally in the mature stage of their lifecycles and not transitioning from one growth stage to another. This is especially true for water utilities.

All companies, including utilities, go through typical life cycles in their development, initially progressing through a growth stage, moving onto a transition stage and finally assuming a steady-state or constant growth state. However, the U.S. public utility industry is a long-standing industry in the U.S., dating back to approximately 1882. The standards of rate of return regulation of public utilities date back to the previously discussed principles of fair rate of return established in the Hope and Bluefield decisions of 1944 and 1923, respectively. Hence, the public utility industry in the U.S. is a stable and mature industry characterized by the steady-state or constant-growth stage of a multi-stage DCF model. The regulated economics of the utility industry further reflect the features of this relative stability and demand maturity. Their returns on capital investment, i.e., rate base, are set through a ratemaking process and not determined in the competitive markets. This characteristic, taken together with the longevity of the public utility industry, all contribute to the stability and maturity of the industry at large, including the water utility industry.

Since there is no basis for applying multi-stage growth versions of the DCF

model to determine the common equity cost rates of mature public utility companies, the constant growth model is most appropriate.

Q. PLEASE DESCRIBE THE DIVIDEND YIELD YOU USED IN YOUR APPLICATION OF THE DCF MODEL.

A. The unadjusted dividend yields are based upon a recent (April 1, 2011) indicated dividend divided by the average of closing market prices for the 60 days ending April 1, 2011 as shown in Column 1 on page 1 of Schedule PMA-6.

Q. PLEASE EXPLAIN THE DIVIDEND GROWTH COMPONENT SHOWN ON PAGE 1 OF SCHEDULE PMA-6, COLUMN 2.

A. Because dividends are paid quarterly, or periodically, as opposed to continuously (daily), an adjustment must be made to the dividend yield. This is often referred to as the discrete, or the Gordon Periodic, version of the DCF model.

DCF theory calls for the use of the full growth rate, or D_1, in calculating the dividend yield component of the model. However, since the various companies in the proxy group increase their quarterly dividend at various times during the year, a reasonable assumption is to reflect one-half the annual dividend growth rate in the dividend yield component, or $D_{1/2}$. This is a conservative approach which does not overstate the dividend yield which should be representative of the next twelve-month period. Therefore, the actual average dividend yields in Column 1 on page 1 of Schedule PMA-6 have been adjusted upward to reflect one-half the growth rates shown in Column 4.

Q. PLEASE EXPLAIN THE BASIS OF THE GROWTH RATES OF THE PROXY GROUP WHICH YOU USE IN YOUR APPLICATION OF THE DCF MODEL.

A. Schedule PMA-7 shows that approximately 53% of the common shares of the eight water companies are held by individuals as opposed to institutional investors. Common stocks are held by both individual investors and institutional investors with more extensive informational resources. Since individual investors tend to have more limited resources, they are likely to place great significance on the opinions expressed by financial information services, such as Value Line, Reuters, Zacks and Yahoo! Finance, which are easily accessible and/or available on the Internet and through public libraries. Investors realize that analysts have significant insight into the dynamics of the industries and individual companies they analyze, as well as company's abilities to effectively manage the effects of changing laws and regulations and ever changing economic and market conditions.

Over the long run, there can be no growth in DPS without growth in EPS. Security analysts' earnings expectations have a more significant, but not sole, influence on market prices than dividend expectations. Thus, the use of earnings growth rates in a DCF analysis provides a better matching between investors' market price appreciation expectations and the growth rate component of the DCF. Earnings expectations have a significant influence on market prices and their appreciation or "growth" experienced by investors.[15] This should be evident even to relatively unsophisticated investors just by listening to financial new reports on radio, TV or reading the newspapers.

In addition, Myron Gordon, the "father" of the standard regulatory version of the DCF model widely utilized throughout the United States in rate base/rate of return

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[15] Morin 298 - 303.

regulation has recognized the significance of analysts' forecasts of growth in EPS in a speech he gave in March 1990 before the Institute for Quantitative Research and Finance. He said:

> We have seen that earnings and growth estimates by security analysts were found by Malkiel and Cragg to be superior to data obtained from financial statements for the explanation of variation in price among common stocks. . . estimates by security analysts available from sources such as IBES are far superior to the data available to Malkiel and Cragg. Eq (7) is not as elegant as Eq (4), but it has a good deal more intuitive appeal. It says that investors buy earnings, but what they will pay for a dollar of earnings increases with the extent to which the earnings are reflected in the dividend or in appreciation through growth.

Professor Gordon recognized that total return is largely affected by the terminal price which is mostly affected by earnings (hence price / earnings multiples). However, while EPS is the most significant factor influencing market prices, it is by no means the only factor that affects market prices, a fact recognized by Bonbright[16] with regard to public utilities when he stated:

> In the first place, commissions cannot forecast, except within wide limits, the effect their rate orders will have on the market prices of the stocks of the companies they regulate. In the second place, *whatever the initial market prices may be, they are sure to change not only with the changing prospects for earnings, but with the changing outlook of an inherently volatile stock* market. In short, market prices are beyond the control, though not beyond the influence of rate regulation. Moreover, even if a commission did possess the power of control, any attempt to exercise it ... would result in harmful, uneconomic shifts in public utility rate levels. (italics added)

Studies performed by Cragg and Malkiel[17] demonstrate that analysts' forecasts

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[16] Bonbright, James C., Danielsen, Albert L., Kamerschen, David R., Principles of Public Utility Rates (Public Utilities Reports, Inc., 1988) 334.

[17] Cragg, John G. and Malkiel, Burton G., Expectations and the Structure of Share Prices (University of Chicago Press, 1982) Chapter 4.

are superior to historical growth rate extrapolations. Some question the accuracy of analysts' forecast of EPS growth, however, it does not really matter what the level of accuracy of those analysts' forecasts is well after the fact. What is important is that they reflect widely held expectations influencing investors at the time they make their pricing decisions and hence the market prices they pay. Moreover, there is no empirical evidence that investors, consistent with the EMH, would disregard analysts' estimates of growth in earnings per share.[18] As stated previously, the "semistrong" form of the EMH, which is generally held to be true, indicates investors are aware of all publicly-available information, including the many security analysts' earnings growth rate forecasts available. Investors are also aware of the accuracy of past forecasts, whether for EPS or DPS growth or for interest rates levels. Investors have no prior knowledge of the accuracy of any forecasts available at the time they make their investment decisions, as that accuracy only becomes known after some future period of time has elapsed. Therefore, given the overwhelming academic/empirical support regarding the superiority of security analysts' EPS growth rate forecasts, such EPS growth rate projections should be relied upon in a cost of common equity analysis.

In response to recent concern about the use of security analysts' EPS growth rate forecasts, Dr. Burton G. Malkiel, the Chemical Bank Chairman's Professor of Economics at Princeton University and author of the widely read national bestseller book on investing entitled, "A Random Walk Down Wall Street," affirmed his belief in the superiority of analysts' earnings forecasts when he testified before the Public

[18] Agrawal, Anup and Chen, Mark A., "Do Analysts' Conflicts Matter? Evidence from Stock Recommendations", (Journal of Law and Economics, August 2008), Vol. 51.

Service Commission of South Carolina, in November 2002:

> With all the publicity given to tainted analysts' forecasts and investigations instituted by the New York Attorney General, the National Association of Securities Dealers, and the Securities & Exchange Commission, I believe the upward bias that existed in the late 1990s has indeed diminished. In summary, I believe that current analysts' forecasts are more reliable than they were during the late 1990s. Therefore, analysts' forecasts remain the proper tool to use in performing a Gordon Model DCF analysis. (Rebuttal testimony, South Carolina Electric and Gas Co., pp. 16-17, Docket No. 2002-223-E)

Consequently, I have reviewed security analysts' projected growth rates in EPS, as well as Value Line's projected five-year compound growth rates in EPS for each company in the proxy group is summarized on page 2, Schedule PMA-6.

Q. PLEASE SUMMARIZE THE DCF MODEL RESULTS.

A. As shown on page 1 of Schedule PMA-6, the median result of the application of the single-stage DCF model is 9.81% for the proxy group of eight water companies. In arriving at a conclusion of a DCF-indicated common equity cost rate for the proxy group, I have relied upon the median of the results of the DCF, due to the wide range of DCF results as well as the continuing volatile capital market conditions and to not give undue weight to outliers on either the high or the low side. In my opinion, the median is a more accurate and reliable measure of central tendency, and provides recognition of all the DCF results.

C. The Risk Premium Model (RPM)

Q. PLEASE DESCRIBE THE THEORETICAL BASIS OF THE RPM.

A. The RPM is based upon the basic financial principle of risk and return, namely, that investors require greater returns for bearing greater risk. The RPM recognizes that common equity capital has greater investment risk than debt capital, as common equity shareholders are last in line in any claim on a company's assets and earnings, with debt

holders being first in line. Therefore, investors require higher returns from common stocks than from investment in bonds, to compensate them for bearing the additional risk.

While the investors' required common equity return cannot be directly determined or observed, it is possible to directly observe bond returns and yields. According to RPM theory, one can assess a common equity risk premium over bonds, either historically or prospectively, using that premium to derive a cost rate of common equity.

In summary, according to RPM theory, the cost of common equity equals the expected cost rate for long-term debt capital plus a risk premium over that cost rate to compensate common shareholders for the added risk of being unsecured and last-in-line for any claim on the corporation's assets and earnings.

Q. SOME ANALYSTS STATE THAT THE RPM IS ANOTHER FORM OF THE CAPM. DO YOU AGREE?

A. While there are some similarities, there is a very significant distinction between the two models. The RPM and CAPM both add a "risk premium" to an interest rate. However, the beta approach to the determination of an equity risk premium in the RPM should not be confused with the CAPM. Beta is a measure of systematic, or market, risk, a relatively small percentage of total risk (the sum of both non-diversifiable systematic and diversifiable unsystematic risk). Unsystematic risk is fully captured in the RPM through the use of the long-term public utility bond yield as can be shown by reference to page 3 of Schedule PMA-4 which confirms that the bond/credit rating process involves a comprehensive assessment of both business and financial risks. In

contrast, the use of a risk-free rate of return in the CAPM does not, and by definition cannot, reflect a company's specific, i.e., unsystematic, risk. Consequently, a much larger portion of the total common equity cost rate is reflected in the company- or proxy group-specific bond yield (a product of the bond rating) than is reflected in the risk-free rate in the CAPM, or even by the dividend yield employed in the DCF model. Moreover, the financial literature recognizes the RPM and CAPM as two separate and distinct cost of common equity models.

Q. PLEASE EXPLAIN THE BASIS OF THE EXPECTED BOND YIELD OF 6.14% APPLICABLE TO THE PROXY GROUP OF EIGHT WATER COMPANIES.

A. The first step in the RPM analysis is to determine the expected bond yield. Because both ratemaking and the cost of capital, including common equity cost rate, are prospective in nature, a prospective yield on similarly-rated long-term debt is essential. Since both ratemaking and the cost of capital are prospective in nature, I rely upon a consensus forecast of about 50 economists of the expected yield on Aaa rated corporate bonds for the six calendar quarters ending with the third calendar quarter of 2012 as derived from the April 1, 2011 Blue Chip Financial Forecasts (shown on page 7 of Schedule PMA-8). As shown on Line No. 1 of page 1 of Schedule PMA-9, the average expected yield on Moody's Aaa rated corporate bonds is 5.55%. An adjustment of 51 basis points (0.51%) is necessary to adjust that average Aaa corporate bond yield to be equivalent to a Moody's A2 rated public utility bond as shown on Line No. 2 and explained in Note 2 resulting in an expected bond yield applicable to a Moody's A rated public utility bond of 6.06% as shown on Line No. 3.

Since the eight water companies average Moody's bond rating is A3, an

adjustment of 16 basis points (0.16%) is necessary to make the prospective bond yield applicable to an A3 public utility bond, as detailed in Note 3 on page 1 of Schedule PMA-8. Therefore, the expected specific bond yield is 6.22% for the eight water companies as shown on Line No. 5.

Q. PLEASE EXPLAIN THE METHOD UTILIZED TO ESTIMATE THE EQUITY RISK PREMIUM.

A. I evaluated the results of two different historical equity risk premium studies, as well as Value Line's forecasted total annual market return in excess of the prospective yield on Moody's Aaa corporate bonds, as detailed on pages 5, 6 and 8 of Schedule PMA-8. As shown on Line No. 3, page 5, the mean equity risk premium is 4.39% applicable to the eight water companies. These estimates are the result of an average of a beta-derived historical equity risk premium as well as the mean historical equity risk premium applicable to public utilities with bonds rated A based upon holding period returns.

The basis of the beta-derived equity risk premiums applicable to the proxy group is shown on page 6 of Schedule PMA-8. The beta-determined equity risk premium should receive substantial weight because betas are derived from the market prices of common stocks over a recent five-year period. Beta is a meaningful measure of prospective relative risk to the market as a whole and is a logical means by which to allocate a company's/proxy group's share of the market's total equity risk premium relative to corporate bond yields.

The total market equity risk premium utilized is 6.30% and is based upon an average of the long-term historical market risk premium and forecasted market risk premium as well as an equity risk premium based upon a study of the holding period

returns of the S&P Public Utility Index relative to A rated public utility bond yields. To derive the historical market equity risk premium, I used the most recent Morningstar[19] data on holding period returns for the S&P 500 Composite Index from the 2011 Ibbotson® SBBI® – 2011 Valuation Yearbook – Market Results for Stocks, Bonds, Bills and Inflation – 1926-2010 and the average historical yield on Moody's Aaa and A rated corporate bonds for the period 1926-2010. The use of holding period returns over a very long period of time is useful because it is consistent with the long-term investment horizon presumed by the DCF model. As the SBBI – 2011 states[20]:

> The estimate of the equity risk premium depends on the length of the data series studied. A proper estimate of the equity risk premium requires a data series long enough to give a reliable average without being unduly influenced by very good and very poor short-term returns. When calculated using a long data series, the historical equity risk premium is relatively stable.[5] Furthermore, because an average of the realized equity risk premium is quite volatile when calculated using a short history, using a long series makes it less likely that the analyst can justify any number he or she wants. The magnitude of how shorter periods can affect the result will be explored later in this chapter.
>
> Some analysts estimate the expected equity risk premium using a shorter, more recent time period on the basis that recent events are more likely to be repeated in the near future; furthermore, they believe that the 1920s, 1930s and 1940s contain too many unusual events. This view is suspect because all periods contain "unusual" events. Some of the most unusual events of the last hundred years took place quite recently, including the inflation of the late 1970s and early 1980s, the October 1987 stock market crash, the collapse of the high-yield bond market, the major contraction and consolidation of the thrift industry, the collapse of the Soviet Union, the development of the European Economic Community, and the attacks of September 11, 2001 and the more recent liquidity crisis of 2008 and 2009.

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[19] Morningstar, Inc. acquired Ibbotson Associates in 2006.

[20] Ibbotson® SBBI® – 2010 Valuation Yearbook – Market Results for Stocks, Bonds, Bills and Inflation – 1926 – 2009 (SBBI 2010) (Morningstar, Inc., 2010) 59.

> It is even difficult for economists to predict the economic environment of the future. For example, if one were analyzing the stock market in 1987 before the crash, it would be statistically improbable to predict the impending short-term volatility without considering the stock market crash and market volatility of the 1929-1931 period.
>
> Without an appreciation of the 1920s and 1930s, no one would believe that such events could happen. The 85-year period starting with 1926 is representative of what can happen: it includes high and low returns, volatile and quiet markets, war and peace, inflation and deflation, and prosperity and depression. Restricting attention to a shorter historical period underestimates the amount of change that could occur in a long future period. Finally, because historical event-types (not specific events) tend to repeat themselves, long-run capital market return studies can reveal a great deal about the future. Investors probably expect "unusual" events to occur from time to time, and their return expectations reflect this. (footnote omitted)

Consequently, the long-term arithmetic mean total return rates on the market as a whole of 11.90% and the long-term arithmetic mean yield on corporate bonds of 6.10% were used, as shown at Line Nos. 1 and 2 of page 6 of Schedule PMA-8. As shown on Line No. 3 of page 6, the resultant long-term historical equity risk premium on the market as a whole is 5.80%.

I used arithmetic mean return rates and yields (income returns) because they are appropriate for cost of capital purposes as noted in the SBBI – 2011. Arithmetic mean return rates and yields are appropriate because ex-post (historical) total returns and equity risk premiums differ in size and direction over time, providing insight into the variance and standard deviation of returns. Because the arithmetic mean captures the prospect for variance in returns and equity risk premiums, it provides the valuable insight needed by investors in estimating future risk when making a current investment. Absent such valuable insight into the potential variance of returns, investors cannot meaningfully evaluate prospective risk. If investors alternatively relied upon the

geometric mean of ex-post equity risk premiums, they would have no insight into the potential variance of future returns because the geometric mean relates the change over many periods to a constant rate of change, thereby obviating the year-to-year fluctuations, or variance, *critical to risk analysis.*

The financial literature is quite clear on this point, that risk is measured by the variability of expected returns, i.e., the probability distribution of returns.[21] Pages 56 and 57 of SBBI – 2011 (see pages 9 and 10 of Schedule PMA-9) explain in detail why the arithmetic mean is the correct mean to use when estimating the cost of capital.

In addition, Weston and Brigham[22] provide the standard financial textbook definition of the riskiness of an asset when they state:

> The riskiness of an asset is defined in terms of the likely variability of future returns from the asset. (emphasis added)

And Morin states[23]:

> The geometric mean answers the question of what constant return you would have to achieve in each year to have your investment growth match the return achieved by the stock market. The arithmetic mean answers the question of what growth rate is the best estimate of the future amount of money that will be produced by continually reinvesting in the stock market. It is the rate of return which, compounded over multiple periods, gives the mean of the probability distribution of ending wealth. (emphasis added)

In addition, Brealey and Myers[24] note:

> The proper uses of arithmetic and compound rates of return from past investments are often misunderstood. . . Thus the arithmetic average of the returns correctly measures the opportunity cost of capital for

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21 Brigham (1989) 639.

22 Weston, J. Fred and Brigham, Eugene F., Essentials of Managerial Finance Third Edition (The Dryden Press, 1974) 272.

23 Morin 133.

24 Brealey and Myers 146-147.

investments. . . . *Moral*: If the cost of capital is estimated from historical returns or risk premiums, use arithmetic averages, not compound annual rates of return. (italics in original)

As previously discussed, investors gain insight into relative riskiness by analyzing expected future variability. This is accomplished by the use of the arithmetic mean of a distribution of returns / premiums. Only the arithmetic mean takes into account all of the returns / premiums, hence, providing meaningful insight into the variance and standard deviation of those returns / premiums.

Q. CAN IT BE DEMONSTRATED THAT THE ARITHMETIC MEAN TAKES INTO ACCOUNT ALL OF THE RETURNS AND THEREFORE, THAT THE ARITHMETIC MEAN IS APPROPRIATE TO USE WHEN ESTIMATING THE OPPORTUNITY COST OF CAPITAL IN CONTRAST TO THE GEOMETRIC MEAN?

A. Yes. Pages 1 through 3 of Schedule PMA-9 graphically demonstrate this premise. Page 1 charts the returns on large company stocks for each and every year, 1926 through 2010 from SBBI 2011. It is clear from observing the year-to-year variation of these returns, that stock market returns, and hence, equity risk premiums, vary.

The distribution of each and every one of those returns for the entire period from 1926 through 2010 is shown on page 2. There is a clear bell-shaped pattern to the probability distribution of returns, an indication that they are randomly generated and not serially correlated. The arithmetic mean of this distribution of returns considers each and every return in the distribution. In doing so, the arithmetic mean takes into account the standard deviation or likely variance which may be experienced in the future when estimating the rate of return based upon such historical returns. In

contrast, page 3 of Schedule PMA-9 demonstrates that when the geometric mean is calculated, only two of the returns are considered, namely the initial and terminal years, which, in this case, are 1926 and 2010. Based upon only those two years, a constant rate of return is calculated by the geometric average. That constant return, graphically, is represented by a flat line, showing no year-to-year variation, over the entire 1926 to 2010 time period, which is obviously far different from reality, based upon the probability distribution of returns shown on page 2 and demonstrated on page 1.

Consequently, only the arithmetic mean takes the standard deviation of returns which is critical to risk analysis into account. The geometric mean is appropriate only when measuring historical performance and should not be used to estimate the investors required rate of return

Q. HOW DID YOU INCORPORATE VALUE LINE'S FORECASTED TOTAL ANNUAL MARKET RETURN IN EXCESS OF THE PROSPECTIVE YIELD ON HIGH RATED CORPORATE BONDS IN YOUR DEVELOPMENT OF AN EQUITY RISK PREMIUM FOR YOUR RPM ANALYSIS?

A. Once again, because both ratemaking and the cost of capital, including the cost rate of common equity are prospective, a prospective market equity risk premium is essential. The basis of the forecasted or prospective market equity risk premium can be found on Line Nos. 4 through 6 on page 6 of Schedule PMA-8. Consistent with the development of the dividend yield component of my DCF analysis, it is derived from an average of the most recent thirteen weeks ending April 8, 2011 3-5 year median market price appreciation potentials by Value Line plus an average of the median estimated dividend yield for the common stocks of the 1,700 firms covered in Value Line's Standard

Edition as explained in detail in Note 1 on page 3 of Schedule PMA-10.

The average median expected price appreciation is 49% which translates to a 10.48% annual appreciation and, when added to the average (similarly calculated) median dividend yield of 1.86% equates to a forecasted annual total return rate on the market as a whole of 12.34%. The forecasted total market equity risk premium of 6.79% is derived by deducting the April 1, 2011 Blue Chip Financial Forecasts consensus estimate of about 50 economists of the expected yield on Moody's Aaa rated corporate bonds for the six calendar quarters ending with the third calendar quarter 2012 of 5.55% shown on Schedule PMA-8, page 6, Line No. 6 (6.79% = 12.34% - 5.55%).

In arriving at my conclusion of equity risk premium of 6.30% on Line No. 7 on page 6 of Schedule PMA-8, I have given equal weight to the historical equity risk premium of 5.80% and the forecasted equity risk premium of 6.79% shown on Line Nos. 3 and 6, respectively (6.30% = (5.80% + 6.79%)/2).

Q. WHAT IS YOUR CONCLUSION OF AN EQUITY RISK PREMIUM FOR USE IN YOUR RPM ANALYSIS?

A. On page 2 of Schedule PMA-10, the most current Value Line betas for the companies in the proxy group are shown. Applying the median beta of the proxy group, consistent with my reliance upon the median DCF results as previously discussed, to the market equity risk premium of 6.30% results in a beta adjusted equity risk premium of 4.60% for the proxy group of eight water companies.

A mean equity risk premium of 4.17% applicable to utilities with A rated public utility bonds such as the proxy group of eight water companies was calculated based

upon holding period returns from a study using public utilities, as shown on Line No. 2, page 5 of Schedule PMA-8 and is detailed on page 8.

The equity risk premium applicable to the proxy group of eight water companies is the average of the beta-derived premium, 4.60%, and that based upon the holding period returns of public utilities with A rated bonds, 4.17%, as summarized on Schedule PMA-8, page 5, i.e., 4.39%.

Q. WHAT IS THE INDICATED RPM COMMON EQUITY COST RATE?

A. It is 10.61% for the eight water companies as shown on Schedule PMA-8, page 1.

Q. SOME CRITICS OF THE RPM MODEL CLAIM THAT ITS WEAKNESS IS THAT IT PRESUMES A CONSTANT EQUITY RISK PREMIUM. IS SUCH A CLAIM VALID?

A. No. The equity risk premium varies inversely with interest rate changes, although not in tandem with those changes. However, the presumption of a constant equity risk premium is no different than the presumption of a constant "g", or growth component, in the DCF model. If one calculates a DCF cost rate today, the absolute result "k", as well as the growth component "g", would invariably differ from a calculation made just one or several months earlier or later. This implies that "g" does change, although in the application of the standard DCF model, "g" is presumed to be constant. Hence, there is no difference between the RPM and DCF models in that both models assume a constant component, but in reality, these components, "g" and the equity risk premium both change.

As Morin[25] states with respect to the DCF model:

> It is not necessary that *g* be constant year after year to make the model valid. *The growth rate may vary randomly around some average expected value. Random variations around trend are perfectly acceptable, as long as the mean expected growth is constant.* The growth rate must be 'expectationally constant' to use formal statistical jargon. (italics added)

The foregoing confirms that the RPM is similar to the DCF model. Both assume an "expectationally constant" risk premium and growth rate, respectively, but in reality both vary (change) randomly around an arithmetic mean. Consequently, the use of the arithmetic mean, and not the geometric mean is confirmed as appropriate in the determination of an equity risk premium as discussed previously.

D. The Capital Asset Pricing Model (CAPM)

Q. PLEASE EXPLAIN THE THEORETICAL BASIS OF THE CAPM.

A. CAPM theory defines risk as the covariability of a security's returns with the market's returns as measured by beta ("β"). A beta less than 1.0 indicates lower variability while a beta greater than 1.0 indicates greater variability than the market.

The CAPM assumes that all other risk, i.e., all non-market or unsystematic risk, can be eliminated through diversification. The risk that cannot be eliminated through diversification is called market, or systematic, risk. In addition, the CAPM presumes that investors require compensation only for these systematic risks which are the result of macroeconomic and other events that affect the returns on all assets. The model is applied by adding a risk-free rate of return to a market risk premium, which is adjusted proportionately to reflect the systematic risk of the individual security relative to the total market as measured by beta. The traditional CAPM model is expressed as:

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[25] Morin 256.

$$R_s = R_f + \beta(R_m - R_f)$$

Where:

R_s	=	Return rate on the common stock
R_f	=	Risk-free rate of return
R_m	=	Return rate on the market as a whole
β	=	Adjusted beta (volatility of the security relative to the market as a whole)

Numerous tests of the CAPM have measured the extent to which security returns and betas are related as predicted by the CAPM confirming its validity. However, Morin observes that while the results of these tests support the notion that beta is related to security returns, the empirical Security Market Line (SML) described by the CAPM formula is not as steeply sloped as the predicted SML. Morin[26] states:

> With few exceptions, the empirical studies agree that ... low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted.
>
> * * *
>
> Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:
>
> $$K = R_F + x\,\beta(R_M - R_F) + (1-x)\,\beta(R_M - R_F)$$
>
> where x is a fraction to be determined empirically. The value of x that best explains the observed relationship Return = 0.0829 + 0.0520 β is between 0.25 and 0.30. If x = 0.25, the equation becomes:
>
> $$K = R_F + 0.25(R_M - R_F) + 0.75\,\beta(R_M - R_F)$$[27]

In view of theory and practical research, I have applied both the traditional CAPM and the ECAPM to the companies in the proxy group and averaged the results.

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[26] Morin 175.

[27] Morin 190.

Q. PLEASE DESCRIBE YOUR SELECTION OF A RISK-FREE RATE OF RETURN.

A. As shown at the top of column 3 on page 2 of Schedule PMA-10, the risk-free rate adopted for both applications of the CAPM is 4.88%. Again, because both ratemaking and the cost of capital, including common equity, are prospective, the risk-free rate for my CAPM analysis is based upon the average consensus forecast of the reporting economists in the April 1, 2011 Blue Chip Financial Forecasts as shown in Note 2, page 3, of the expected yields on 30-year U.S. Treasury bonds for the six quarters ending with the third calendar quarter 2012.

Q. WHY IS THE PROSPECTIVE YIELD ON LONG-TERM U.S. TREASURY BONDS APPROPRIATE FOR USE AS THE RISK-FREE RATE?

A. The yield on long-term U.S. Treasury T-Bonds is almost risk-free and its term is consistent with the long-term cost of capital to public utilities measured by the yields on A rated public utility bonds, the long-term investment horizon inherent in utilities' common stocks, the long-term investment horizon presumed in the standard DCF model employed in regulatory ratemaking, and the long-term life of the jurisdictional rate base to which the allowed fair rate of return, i.e., cost of capital will be applied. In contrast, short-term U.S. Treasury yields are more volatile and largely a function of Federal Reserve monetary policy.

In addition, as noted in the SBBI - 2010[28]:

> Although the equity risk premiums of several horizons are available, the long-horizon equity risk premium is preferable for use in most business-valuation settings, even if an investor has a shorter time horizon. Companies are entities that generally have no defined life

[28] SBBI 2010 55.

span; when determining a company's value, it is important to use a long-term discount rate because the life of the company is assumed to be infinite. For this reason, it is appropriate in most cases to use the long-horizon equity risk premium for business valuation.

Q. PLEASE EXPLAIN THE ESTIMATION OF THE EXPECTED EQUITY RISK PREMIUM FOR THE MARKET.

A. The basis of the market equity risk premium is explained in detail in Note 1 on page 3 of Schedule PMA-10. It is derived from an average of the most recent thirteen weeks ending April 8, 2011 3-5 year median total market price appreciation projects from Value Line, resulting in a total annual return of 12.34% as discussed previously, and the long-term historical arithmetic mean total returns for the years 1926 – 2010 on large company stocks from the SBBI - 2011 of 11.90%. From these returns, the appropriate projected and historical risk-free rates are subtracted to arrive at a projected and historical equity risk premium for the market.

For example, the forecasted total market equity risk premium is derived by deducting the April 1, 2011 Blue Chip Financial Forecasts consensus estimate of about 50 economists of the expected yield on U.S. Treasury Notes of 4.88% from the Value Line projected total annual market return of 12.34%, resulting in a forecasted total market equity risk premium of 7.46%. From SBBI – 2011 historical total market return of 11.90%, the long-term income return on U.S. Government Securities of 5.20% was deducted resulting in an historical equity risk premium of 6.70% which results in an average total market equity risk premium of 7.08%.

Q. WHAT ARE THE RESULTS OF YOUR APPLICATION OF THE TRADITIONAL AND EMPIRICAL CAPM TO THE PROXY GROUP?

A. As shown on Schedule PMA-10, Line No. 1 of page 1, the median traditional CAPM

cost rate is 10.02% for the eight water companies, and, as shown on Line No. 2 the median empirical CAPM cost rate is 10.50%. The traditional and empirical CAPM cost rates are shown individually by company on page 2. Consistent with my reliance upon the median DCF results discussed previously, I rely upon the median results of the traditional CAPM and ECAPM for the proxy group. Thus, as shown on Line No. 3 on page 1, the CAPM cost rate applicable to the proxy group of eight water companies is 10.26% based upon an average of the traditional and empirical CAPM results for the proxy group.

Q. SOME CRITICS OF THE ECAPM MODEL CLAIM THAT USING ADJUSTED BETAS IN A TRADITIONAL CAPM AMOUNTS TO USING AN ECAPM. IS SUCH A CLAIM VALID?

A. No. Using adjusted betas in a CAPM analysis is not equivalent to the ECAPM. Betas are adjusted because of the general regression tendency of betas to converge toward 1.0 over time, i.e., over successive calculations of beta. As noted above, numerous studies have determined that the Security Market Line (SML) described by the CAPM formula at any given moment in time is not as steeply sloped as the predicted SML. Morin[29] states:

> Some have argued that the use of the ECAPM is inconsistent with the use of adjusted betas, such as those supplied by Value Line and Bloomberg. This is because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since Value Line betas are already adjusted for such trend [sic], an ECAPM analysis results in double-counting. This argument is erroneous. Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal

[29] Morin 191.

> recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if the ECAPM is used, the return for low-beta securities is understated if the betas are understated. Referring back to Figure 6-1, the ECAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. Both adjustments are necessary.

Moreover, the slope of the Security Market Line (SML) should not be confused with beta. As Eugene F. Brigham, finance professor emeritus and the author of many financial textbooks states[30] :

> The slope of the SML reflects the degree of risk aversion in the economy – the greater the average investor's aversion to risk, then (1) the steeper is the slope of the line, (2) the greater is the risk premium for any risky asset, and (3) the higher is the required rate of return on risky assets.[12]
>
> [12]Students sometimes confuse beta with the slope of the SML. This is a mistake. As we saw earlier in connection with Figure 6-8, and as is developed further in Appendix 6A, beta does represent the slope of a line, but *not* the Security Market Line. This confusion arises partly because the SML equation is generally written, in this book and throughout the finance literature, as $k_i = R_F + b_i(k_M - R_F)$, and in this form b_i looks like the slope coefficient and $(k_M - R_F)$ the variable. It would perhaps be less confusing if the second term were written $(k_M - R_F)b_i$, but this is not generally done.

In addition, regulatory support for the ECAPM can be found in the New York Public Service Commission's Generic Financing Docket, Case 91-M-0509. Also, the Regulatory Commission of Alaska (RCA) in its Order No. 151 in Docket No. P-97-4 (Order entered 11/27/02) re: In the Matter of the Correct Calculation and Use of Acceptable Input Data to Calculate the 1997, 1998, 1999, 2000, 2001 and 2002 Tariff Rates for the Intrastate Transportation of Petroleum over the TransAlaska Pipeline

[30] Brigham and Gapenski 203.

System, noted:

> Although we primarily rely upon Tesoro's recommendation, we are concerned, however, about Tesoro's CAPM analysis. Tesoro averaged the results it obtained from CAPM and ECAPM while at the same time providing empirical testimony[604] (footnote omitted) that the ECAPM results are more accurate then [sic] traditional CAPM results. The reasonable investor would be aware of these empirical results. Therefore, we adjust Tesoro's recommendation to reflect only the ECAPM result.

Thus, using adjusted betas in an ECAPM analysis is not incorrect nor inconsistent with either their financial literature or regulatory precedent. Notwithstanding empirical and regulatory support for the use of only the ECAPM, my CAPM analysis, which includes both the traditional CAPM and the ECAPM, is a conservative approach resulting in a reasonable estimate of the cost of common equity.

E. Comparable Earnings Model (CEM)

Q. PLEASE DESCRIBE THE BASIS OF YOUR COMPARABLE EARNINGS MODEL.

A. The comparable earnings approach is derived from the "corresponding risk" standard of the landmark cases of the U.S. Supreme Court. Therefore, it is consistent with the Hope doctrine that the return to the equity investor should be commensurate with returns on investments in other firms having corresponding risks.

The CEM is based upon the fundamental economic concept of opportunity cost which maintains that the true cost of an investment is equal to the cost of the best available alternative use of the funds to be invested. The opportunity cost principle is also consistent with one of the fundamental principles upon which regulation rests: that regulation is intended to act as a surrogate for competition and to provide a fair rate of return to investors.

As Morin[31] notes:

> Although the Comparable Earnings test does not square well with economic theory, the approach is nevertheless meritorious. If the basic purpose of comparable earnings is to set a fair return rather than determine the true economic return, then the argument is academic. If regulators consider a fair return as one that equals the book rates of return earned by comparable-risk firms rather than one that is equal to the cost of capital of such firms, the Comparable Earnings test is relevant. This notion of fairness, rooted in the traditional legalistic interpretation of the *Hope* language, validates the Comparable Earnings test.
>
> The Comparable Earnings approach is far more meaningful in the regulatory arena than in the sphere of competitive firms. Unlike industrial companies, the earnings requirement of utilities is determined by applying a percentage rate of return to the book value of a utility's investment, and not on the market value of that investment. Therefore, it stands to reason that a different percentage rate of return than the market cost of capital be applied when the investment base is stated in book value terms rather than market value terms. In a competitive market, investment decisions are taken on the basis of market prices, market values, and market cost of capital. If regulation's role as to duplicate the competitive result perfectly, then the market cost of capital would be applied to the current market value of rate base assets employed by utilities to provide service. But because the investment base for ratemaking purposes is expressed in book value terms, a rate of return on book value, as is the case with Comparable Earnings, is highly meaningful.

The CEM is designed to measure the returns expected to be earned on the book common equity, net worth, or partners' capital of similar risk enterprises. Thus, it provides a direct measure of return, since it translates into practice the competitive principle upon which regulation rests. In my opinion, it is inappropriate to use the achieved returns of regulated utilities of similar risk because to do so would be circular, as achieved returns are a function of authorized ROEs, i.e., the regulatory process itself, and inconsistent with the principle of equality of risk with non-price regulated firms.

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[31] Morin 394-395.

The first step in determining a cost of common equity using the comparable earnings model is to choose an appropriate proxy group(s) of non-price regulated firms similar in risk to the proxy group(s) of price-regulated utilities. The proxy group(s) should be broad-based in order to obviate any company-specific aberrations and exclude utilities to avoid circularity since the achieved returns on book common equity of utilities, being a function of the regulatory process, are substantially influenced by regulatory awards. Therefore, achieved utility ROEs not representative of the returns that could be earned in a truly competitive market.

Q. PLEASE DESCRIBE YOUR APPLICATION OF THE CEM.

A. As stated previously, my application of the CEM is market-based in that the selection criteria for the non-price regulated firms of comparable risk are based upon statistics derived from the market prices paid by investors.

The proxy group of domestic, non-price regulated firms was chosen to reflect both the systematic and unsystematic risks, equaling total risk, of the proxy group of eight water companies. The proxy group of eighty-five non-utility companies similar in total investment risk to the eight water companies is listed on pages 1 and 2 of Schedule PMA-11. Additional criteria used in the selection of these proxy companies were that they be domestic non-utility companies and have a meaningful rate of return on common equity, net worth, or partners' capital projected for 2013-2015 / 2014-2016 as reported in Value Line (Std. Ed.). Value Line betas were used as a measure of systematic risk. The standard error of the regression was used as a measure of each firm's unsystematic or specific risk with the standard error of the regression reflecting the extent to which events specific to a company's operations will affect its stock price.

In essence, companies which have similar betas and standard errors of the regressions, have similar total investment risk, i.e., the sum of systematic (market) risk as reflected by beta and unsystematic (business and financial) risk, as reflected by the standard error of the regression. These statistics are derived from regression analyses using market prices which, under the EMH, reflect all relevant risks. The application of these criteria results in a proxy group of non-price regulated firms similar in total risk to the average utility in the proxy group of water companies.

Using a Value Line, Inc. proprietary database dated March 15, 2011, a proxy group of eighty-five non-price regulated companies was chosen based upon ranges of unadjusted beta and standard error of the regression. The ranges were based upon the standard deviations of the unadjusted beta and the average standard error of the regression for the proxy group of eight water companies as explained in Note 1 on page 3 of Schedule PMA-11.

This selection methodology is meaningful and effectively responds to the criticisms normally associated with the selection of non-regulated firms presumed to be comparable in total risk. It does so because the selection of non-price regulated companies comparable in total risk is based upon regression analyses of market prices which reflect investors' assessment of all risks, diversifiable and non-diversifiable, and is thus market-based.

Once a proxy group of non-price regulated companies is selected, it is then necessary to derive returns on book common equity, net worth or partners' capital for the companies in the group. These are measured using the rate of return on common equity, net worth or partners' capital by Value Line (Std. Ed.) projected for the next

five years consistent with the use of five-year projected EPS growth rates in the DCF model.

Q. WHAT IS YOUR CONCLUSION OF CEM COST RATE?

A. For the proxy group of eight water companies, my conclusion based upon the median of all of the five-year projected returns on book common equity, net worth or partners' capital is 15.00% as shown on page 2 of Schedule PMA-11.

After applying a test of significance (Student's t-statistic) to determine whether any of the projected returns are significantly different from their respective means at the 95% confidence level, the projected returns of several companies have been excluded. After excluding these outliers, my conclusion of CEM cost rate is 14.50% for the eight water companies.

IX. CONCLUSION OF COMMON EQUITY COST RATE

Q. WHAT IS YOUR RECOMMENDED COMMON EQUITY COST RATE?

A. It is 11.10% based upon the common equity cost rates resulting from the application of all four cost of common equity models (DCF, RPM, CAPM and CEM) to the market data of the proxy group of eight water companies, as adjusted for financial risk and business risk due to UWRI's smaller relative size.

As discussed previously, reliance upon multiple models is consistent with the EMH, upon which all four models are premised. I employ all four cost of common equity models as primary tools in arriving at my recommended common equity cost rate because; 1) no single model is so inherently precise that it can be relied upon solely to the exclusion of other theoretically sound models; 2) all four models have application problems associated with them; 3) all four models are based upon the

Efficient Market Hypothesis (EMH); and 4) as demonstrated previously, the prudence of using multiple cost of common equity models is supported in both the financial literature and regulatory precedent. Therefore, none should be relied upon exclusively to estimate investors' required rate of return on common equity.

The results of the four cost of common equity models applied to the eight water companies are shown on Schedule PMA-1, page 3 and summarized below:

Table 2

	Proxy Group of Eight Water Companies
Discounted Cash Flow Model	9.81%
Risk Premium Model	10.61
Capital Asset Pricing Model	10.26
Comparable Earnings Model	14.50
Indicated Common Equity Cost Rate Before Adjustment for Financial Risk and Business Risk	10.75%
Financial Risk Adjustment	(0.21)
Business Risk Adjustment due to Small Size	0.55
Indicated Common Equity Cost Rate After Adjustment	11.09%
Recommended Common Equity Cost Rate	11.10%

Based upon these common equity cost rate results, I conclude that a common equity cost rate of 10.75% is indicated for the eight water companies before the financial risk and business risk adjustments shown on Line Nos. 6 and 7 on page 1 of Schedule PMA-1.

Q. IS THERE A WAY TO QUANTIFY A FINANCIAL RISK ADJUSTMENT DUE TO UWRI'S HIGHER FINANCIAL RISK RELATIVE TO THE PROXY GROUP?

A. Yes. As previously discussed, the Company's requested common equity ratio at March 31, 2011, 52.47% is lower than the common equity ratios maintained, on average, by the companies in the proxy group. Conversely, UWRI's ratemaking debt ratio at March 31, 2011, 47.53%, is higher than the average senior capital (debt and preferred) ratios of the proxy group. Thus, UWRI has higher financial risk than the companies in the proxy group. Because investors require a higher return in exchange for bearing higher risk, an upward adjustment to the common equity cost rate derived from the market data of the proxy group companies which have a lower degree of financial risk than UWRI is necessary.

An indication of the magnitude of the necessary financial risk adjustment is given by the Hamada equation[32], which un-levers and then re-levers betas based upon changes in capital structure.

The Hamada equation un-levers the average beta of the proxy group of eight water companies of 0.73 with an average December 31, 2010 total equity ratio of 49.26% to 0.44 when applied to a 100% common equity ratio and then levers the beta to 0.70 using UWRI's ratemaking common equity ratio of 52.47% on December 2010. The re-levered beta, applied to a 7.08% market risk premium and a 4.88% risk-free rate translates to a 9.84%[33] common equity cost rate. The difference between the 9.84% relevered beta common equity cost rate and the result of the traditional CAPM for the

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32 Brigham and Daves 533.

33 9.84% = (0.70 x 7.08%) + 4.88%.

proxy group with an average beta of 0.73, 10.05%[34] is a negative 21 basis points (0.21%). A downward financial adjustment of 21 basis points (0.21%), reflects the lower financial risk of UWRI attributable to its higher ratemaking common equity ratio of 52.47% compared with the proxy group's average common equity ratio of 49.26%. The Hamada Equation and calculations are as follows:

$$b_l = b_u[1 + (1 - T)(D/S)]$$

Where b_l = Levered beta

b_u = Un-levered beta

T = Tax Rate

(D/S) = Debt to Common Equity Ratio

To un-lever the beta from a 49.26% average proxy group common equity ratio, the following equation is used:

$$0.73 = b_u[1 + (1 - 0.35)\ (50.74\%/49.26\%)]$$

When solved for b_u, b_u = 0.44, indicating that the beta for the proxy group of eight water companies would be 0.44 if their average capital structure contained 100% common equity.

To re-lever the beta relative to UWRI's 52.47% ratemaking common equity ratio, the following equation is used:

$$b_l = 0.44\ [1 + (1 - 0.35)\ (47.53\%/52.47\%)]$$

When solved for b_l, b_l = 0.70, indicating that the beta for the proxy group of eight water companies would be 0.70, if their average capital structure contained 52.47% common equity.

Q. IS THERE A WAY TO QUANTIFY A BUSINESS RISK ADJUSTMENT DUE

[34] 10.05% = (0.73 x 7.08%) + 4.88%.

TO UWRI'S SMALL SIZE RELATIVE TO THE PROXY GROUP?

A. Yes. As discussed previously, the Company has greater business risk than the average company in the proxy group because of its smaller size relative to the group, measured by either book capitalization or the market capitalization of common equity (estimated market value for UWRI, whose common stock is not traded).

Table 3

	Market Capitalization(1) ($ Millions)	Times Greater than the Company
UWRI	$10.206	
Proxy Group of Eight Water Companies	1,346.118	131.9x

(1) From page 1 of Schedule PMA-12.

Because the Company's common stock is not publicly traded, I have assumed that if it were, the common shares would be selling at the same market-to-book ratio as the average market-to-book ratio for the proxy group, 190.9%, on April 1, 2011 as shown on page 2 of Schedule PMA-12. Since my recommended common equity cost rate is based upon the market data of the proxy group, it is reasonable to use the market-to-book ratios of the proxy group to estimate UWRI's market capitalization. Hence, the Company's market capitalization is estimated at $10.206 million based upon the average market-to-book ratio of the proxy group. In contrast, the market capitalization of the average water company was $1.346 billion on April 1, 2011, or 131.9 times the size of UWRI's estimated market capitalization.

Therefore, it is necessary to upwardly adjust the common equity cost rate of

10.75% based upon the water companies. The determination is based on the size premiums for decile portfolios of New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and NASDAQ listed companies for the 1926-2010 period and related data from SBBI-2011. The average size premium for the decile in which the proxy group falls has been compared with the average size premium for the decile in which the market capitalization of UWRI would fall if its stock were traded and sold at the April 1, 2011 average market/book ratio of 190.9% experienced by the proxy group. As shown on page 1, because UWRI falls in the 10^{th} decile and the eight water companies fall between the 6^{th} and 7^{th} deciles, the size premium spread between the Company and the eight water companies is 451 basis points (4.51%).

Consequently, a business risk adjustment of 4.51% due to size is indicated relative to the eight water companies. Nevertheless, a conservatively reasonable business risk adjustment of 55 basis points (0.55%) was made relative to the indicated common equity cost rate of the water proxy group as shown on Line No. 8 on page 1 of Schedule PMA-1 to reflect the Company's greater relative business risk due to size as discussed previously. The previously discussed financial risk adjustment of negative 21 basis points (0.21%) and the size adjustment of 55 basis points (0.55%) when added to the 10.75% indicated common equity cost rate based upon the eight water companies before adjustment, result in an adjusted common equity cost rate of 11.09%, (11.09% = 10.75% - 0.21% + 0.55%). Based upon this financial risk-, and business risk-adjusted common equity cost rate, my recommendation is 11.10%.

When applied to UWRI's ratemaking common equity, a recommended common equity cost rate of 11.10% results in an overall rate of return of 8.74%, which, in my

opinion, is both reasonable and conservative and will provide UWRI with sufficient earnings to enable it to attract necessary new capital.

Q. DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

APPENDIX A

PROFESSIONAL QUALIFICATIONS

OF

PAULINE M. AHERN, CRRA
PRINCIPAL

AUS CONSULTANTS

PROFESSIONAL QUALIFICATIONS
OF
PAULINE M. AHERN, CRRA
PRINCIPAL
AUS CONSULTANTS

PROFESSIONAL EXPERIENCE

1994-Present

In 1996, I became a Principal of AUS Consultants, continuing to offer testimony as an expert witness on the subjects of fair rate of return, cost of capital and related issues before state public utility commissions. I provide assistance and support to clients throughout the entire ratemaking litigation process. In addition, I supervise the financial analyst and administrative staff in the preparation of fair rate of return and cost of capital exhibits which are filed along with expert testimony before various state and federal public utility regulatory bodies. The team also assists in the preparation of interrogatory responses, as well as rebuttal exhibits.

As the Publisher of AUS Utility Reports (formerly C. A. Turner Utility Reports), I am responsible for the production, publishing, and distribution of the reports. AUS Utility Reports provides financial data and related ratios for about 125 public utilities, i.e., electric, combination gas and electric, natural gas distribution, natural gas transmission, telephone, and water utilities, on a monthly, quarterly and annual basis. Among the subscribers of AUS Utility Reports are utilities, many state regulatory commissions, federal agencies, individuals, brokerage firms, attorneys, as well as public and academic libraries. The publication has continuously provided financial statistics on the utility industry since 1930.

As the Publisher of AUS Utility Reports, I also supervise the production, publishing, and distribution of the AGA Rate Service publications under license from the American Gas Association. I am also responsible for maintaining and calculating the performance of the AGA Index, a market capitalization weighted index of the common stocks of the approximately 70 corporate members of the AGA.

As an Assistant Vice President from 1994 - 1996, I prepared fair rate of return and cost of capital exhibits which are filed along with expert testimony before various state and federal public utility regulatory bodies. These supporting exhibits include the determination of an appropriate ratemaking capital structure and the development of embedded cost rates of senior capital. The exhibits also support the determination of a recommended return on common equity through the use of various market models, such as, but not limited to, Discounted Cash Flow analysis, Capital Asset Pricing Model and Risk Premium Methodology, as well as an assessment of the risk characteristics of the client utility. I also assisted in the preparation of responses to any interrogatories received regarding such testimonies filed on behalf of client utilities. Following the filing of fair rate of return testimonies, I assisted in the evaluation of opposition testimony in order to prepare interrogatory questions, areas of cross-examination, and rebuttal testimony. I also evaluated and assisted in the preparation of briefs and exceptions following the hearing process. I have submitted testimony before state public utility commissions regarding appropriate capital structure ratios and fixed capital cost rates.

1990-1994

As a Senior Financial Analyst, I supervised two analysts in the preparation of fair rate of return and cost of capital exhibits which are filed along with expert testimony before various state and federal public utility regulatory bodies. The team also assisted in the preparation of interrogatory responses as well as rebuttal exhibits.

I evaluated the final orders and decisions of various commissions to determine whether further actions are warranted and to gain insight which may assist in the preparation of future rate of return studies.

I assisted in the preparation of an article authored by Frank J. Hanley and A. Gerald Harris entitled "Does Diversification Increase the Cost of Equity Capital?" published in the July 15, 1991 issue of Public Utilities Fortnightly.

I co-authored an article with Frank J. Hanley entitled "Comparable Earnings: New Life for an Old Precept" which was published in the American Gas Association's Financial Quarterly Review, Summer 1994.

In 1992, I was awarded the professional designation "Certified Rate of Return Analyst" (CRRA) by the National Society of Rate of Return Analysts (now the Society of Utility and Regulatory Financial Analysts (SURFA)). This designation is based upon education, experience and the successful completion of a comprehensive examination.

As Administrator of Financial Analysis for AUS Utility Reports, which reports financial data for over 200 utility companies and has approximately 1,000 subscribers, I oversee the preparation of this monthly publication, as well as the annual publication, Financial Statistics - Public Utilities.

1988-1990

As a Financial Analyst, I assisted in the preparation of fair rate of return studies including capital structure determination, development of senior capital cost rates, as well as the determination of an appropriate rate of return on equity. I also assisted in the preparation of interrogatory responses, interrogatory questions of the opposition, areas of cross-examination and rebuttal testimony. I also assisted in the preparation of the annual publication C. A. Turner Utility Reports - Financial Statistics -Public Utilities.

1973-1975

As a research assistant in the Research Department of the Regional Economics Division of the Federal Reserve Bank of Boston, I was involved in the development and maintenance of econometric models to simulate regional economic conditions in New England in order to study the effects of, among other things, the energy crisis of the early 1970's and property tax revaluations on the economy of New England. I was also involved in the statistical analysis and preparation of articles for the New England Economic Review. Also, I acted as assistant editor for New England Business Indicators.

1972

As a research assistant in the Office of the Assistant Secretary for International Affairs, U.S. Treasury Department, Washington, D.C., I developed and maintained econometric models which simulated the economy of the United States in order to study the results of various alternate foreign trade policies so that national trade policy could be formulated and recommended.

Clients Served

I have offered expert testimony before the following commissions:

Arkansas
California
Connecticut
Delaware
Florida
Hawaii
Idaho
Illinois
Indiana
Iowa
Kentucky
Louisiana
Maine
Maryland
Michigan
Missouri
Nevada
New Jersey
New York
North Carolina
Ohio
Pennsylvania
South Carolina
Virginia
Washington

I have sponsored testimony on the rate of return and capital structure effects of merger and acquisition issues for:

California-American Water Company
New Jersey-American Water Company

I have sponsored testimony on fair rate of return and related issues for:

Alpena Power Company
Apple Canyon Utility Company
Applied Wastewater Management, Inc.
Aqua Illinois, Inc.
Aqua New Jersey, Inc.
Aqua Virginia, Inc.
Aquarion Water Company
Artesian Water Company
The Atlantic City Sewerage Company
Audubon Water Company
The Borough of Hanover, PA
Carolina Pines Utilities, Inc.
Carolina Water Service, Inc. of NC
Carolina Water Service, Inc. of SC
The Columbia Water Company
The Connecticut Water Company
Consumers Illinois Water Company
Consumers Maine Water Company
Consumers New Jersey Water Company
City of DuBois, Pennsylvania
Elizabethtown Water Company
Emporium Water Company
GTE Hawaiian Telephone Inc.
Greenridge Utilities, Inc.
Illinois American Water Company
Iowa American Water Company
Water Service Corp. of Kentucky
Lake Wildwood Utilities Corp.
Land'Or Utility Company
Long Neck Water Company
Louisiana Water Service, Inc.
Massanutten Public Service Company
Middlesex Water Company
Missouri-American Water Company
Mt. Holly Water Company
Nero Utility Services, Inc.

New Jersey-American Water Company
The Newtown Artesian Water Company
NRG Energy Center Pittsburgh LLC
NRG Energy Center Harrisburg LLC
Ohio-American Water Company
Penn Estates Utilities
Pinelands Water Company
Pinelands Waste Water Company
Pittsburgh Thermal
San Jose Water Company
Southland Utilities, Inc.
Spring Creek Utilities, Inc.
Sussex Shores Water Company
Tega Cay Water Service, Inc.
Total Environmental Services, Inc.
Treasure Lake Water & Sewer Divisions
Thames Water Americas
Tidewater Utilities, Inc.
Transylvania Utilities, Inc
Trigen-Philadelphia Energy Corporation
Twin Lakes Utilities, Inc.
United Utility Companies
United Water Arkansas, Inc.
United Water Arlington Hills Sewerage, Inc.
United Water Connecticut, Inc.
United Water Delaware, Inc.
United Water Great Gorge, Inc. /
United Water Vernon Transmission, Inc.
United Water Idaho, Inc.
United Water Indiana, Inc.
United Water New Jersey, Inc.
United Water New Rochelle, Inc.
United Water New York, Inc.
United Water Owego / Nichols, Inc.
United Water Pennsylvania, Inc.
United Water South County, Inc.
United Water Toms River, Inc.
United Water Virginia, Inc.
United Water West Lafayette, Inc.
United Water West Milford, Inc.
United Water Westchester, Inc.
Utilities, Inc.
Utilities Inc. of Central Nevada
Utilities, Inc. of Florida
Utilities, Inc. of Louisiana
Utilities Inc. of Nevada
Utilities, Inc. of Pennsylvania
Utilities, Inc. - Westgate
Utilities Services of South Carolina
Utility Center, Inc.
Valley Energy, Inc.
Water Services Corp. of Kentucky
Wellsboro Electric Company
Western Utilities, Inc.

I have sponsored testimony on capital structure and senior capital cost rates for the following clients:

Alpena Power Company
Arkansas-Western Gas Company
Associated Natural Gas Company
PG Energy Inc.
United Water Delaware, Inc.
Washington Natural Gas Company

I have assisted in the preparation of rate of return studies on behalf of the following clients:

Algonquin Gas Transmission Company
Anadarko Petroleum Corporation
Arkansas-Louisiana Gas Company
Arkansas Western Gas Company
Artesian Water Company
Associated Natural Gas Company
Atlantic City Electric Company
Bridgeport-Hydraulic Company
Cambridge Electric Light Company
Carolina Power & Light Company
Citizens Gas and Coke Utility
City of Vernon, CA
Columbia Gas/Gulf Transmission Cos.
Commonwealth Electric Company
Commonwealth Telephone Company
Conestoga Telephone & Telegraph Co.
Connecticut Natural Gas Corporation
Consolidated Gas Transmission Company
Consumers Power Company
CWS Systems, Inc.
Delmarva Power & Light Company
East Honolulu Community Services, Inc.
Equitable Gas Company
Equitrans, Inc.
Florida Power & Light Company
Gary Hobart Water Company
Gasco, Inc.
GTE Arkansas, Inc.
GTE California, Inc.
GTE Florida, Inc.
GTE Hawaiian Telephone
GTE North, Inc.
GTE Northwest, Inc.
GTE Southwest, Inc.
Great Lakes Gas Transmission L.P.
Hawaiian Electric Company
Hawaiian Electric Light Company
IES Utilities Inc.
Illinois Power Company
Interstate Power Company
Interstate Power & Light Co.
Iowa Electric Light and Power Company
Iowa Southern Utilities Company
Kentucky-West Virginia Gas Company
Lockhart Power Company
Middlesex Water Company
Milwaukee Metropolitan Sewer District
Mountaineer Gas Company
National Fuel Gas Distribution Corp.
National Fuel Gas Supply Corp.
Newco Waste Systems of NJ, Inc.
New Jersey Natural Gas Company
New Jersey-American Water Company
New York-American Water Company
North Carolina Natural Gas Corp.
Northumbrian Water Company
Ohio-American Water Company
Oklahoma Natural Gas Company
Orange and Rockland Utilities
Paiute Pipeline Company
PECO Energy Company
Penn Estates Utilities, Inc
Penn-York Energy Corporation
Pennsylvania-American Water Co.
PG Energy Inc.
Philadelphia Electric Company
Providence Gas Company
South Carolina Pipeline Company
Southwest Gas Corporation
Stamford Water Company
Tesoro Alaska Petroleum Company
Tesoro Refining & Marketing Co.
United Telephone of New Jersey
United Utility Companies
United Water Arkansas, Inc.
United Water Delaware, Inc.
United Water Idaho, Inc.
United Water Indiana, Inc.
United Water New Jersey, Inc.
United Water New York, Inc.
United Water Pennsylvania, Inc.
United Water Virginia, Inc.
United Water West Lafayette, Inc.
Utilities, Inc of Pennsylvania
Utilities, Inc - Westgate
Vista-United Telecommunications Corp.
Washington Gas Light Company
Washington Natural Gas Company
Washington Water Power Corporation
Waste Management of New Jersey –
Transfer Station A
Wellsboro Electric Company

Western Reserve Telephone Company
Western Utilities, Inc.

Wisconsin Power and Light Company

EDUCATION:

1973 – Clark University – B.A. – Honors in Economics (Concentration: Econometrics and Regional/International Economics)
1991 – Rutgers University – M.B.A. – High Honors (Concentration: Corporate Finance)

PROFESSIONAL AFFILIATIONS:

American Finance Association
Financial Management Association
Society of Utility and Regulatory Financial Analysts
President – 2006-2008 and 2008-2010
Secretary/Treasurer – 2004-2006
Energy Association of Pennsylvania
National Association of Water Companies – Member of the Finance Committee

SPEAKING ENGAGEMENTS:

"A New Approach for Estimating the Equity Risk Premium for Public Utilities", (co-presenter with Richard A. Michelfelder, Ph.D.) – Hot Topic Hotline Webinar, December 3, 2010, Financial Research Institute of the University of Missouri.

"A New Approach for Estimating the Equity Risk Premium for Public Utilities", (co-presenter with Richard A. Michelfelder, Ph.D.) before the Indiana Utility Regulatory Commission Cost of Capital Task Force, September 28, 2010, Indianapolis, IN

Tomorrow's Cost of Capital: Cost of Capital Issues 2010, Deloitte Center for Energy Solutions, 2010 Deloitte Energy Conference, "Changing the Great Game: Climate, Customers and Capital", June 7-8, 2010, Washington, DC.

"Cost of Capital Issues – 2010" – Deloitte Center for Energy Solutions 2010 Energy Conference: Changing the Great Game: Climate, Consumers and Capital, June 7-8, 2010, Washington, DC

"A New Approach for Estimating the Equity Risk Premium for Public Utilities", (co-presenter with Richard A. Michelfelder, Ph.D.) – Advanced Workshop in Regulation and Competition, 29th Annual Eastern Conference of the Center for Research in Regulated Industries (CRRI), May 20, 2010, Rutgers University, Skytop, PA

Moderator: Society of Utility and Regulatory Financial Analysts: 42nd Financial Forum – "The Changing Economic and Capital Market Environment and the Utility Industry", April 29-30, 2010, Washington, DC

"A New Model for Estimating the Equity Risk Premium for Public Utilities" (co-presenter with

Richard A. Michelfelder, Ph.D.) – Spring 2010 Meeting of the Staff Subcommittee on Accounting and Finance of the National Association of Regulatory Utility Commissioners, March 17, 2010, Charleston, SC

"New Approach to Estimating the Cost of Common Equity Capital for Public Utilities" (co-presenter with Richard A. Michelfelder, Ph.D.) - Advanced Workshop in Regulation and Competition, 28th Annual Eastern Conference of the Center for Research in Regulated Industries (CRRI), May 14, 2009, Rutgers University, Skytop, PA

Moderator: Society of Utility and Regulatory Financial Analysts: 41st Financial Forum – "Estimating the
Cost of Capital in Today's Economic and Capital Market Environment", April 16-17, 2009, Washington, DC

"Water Utility Financing: Where Does All That Cash Come From?", AWWA Pre-Conference Workshop: Water Utility Ratemaking, March 25, 2008, Atlantic City, NJ

PAPERS:

"A New Model for Estimating the Equity Risk Premium for Public Utilities", co-authored with Frank J. Hanley, Dylan D'Ascendis and Richard A. Michelfelder, Ph.D., (under review at The Journal of Regulatory Economics).

"Comparable Earnings: New Life for an Old Precept" co-authored with Frank J. Hanley, Financial Quarterly Review, (American Gas Association), Summer 1994.

BEFORE THE

RHODE ISLAND PUBLIC UTILITIES COMMISSION

EXHIBIT

TO ACCOMPANY THE

PREPARED DIRECT TESTIMONY

OF

PAULINE M. AHERN, CRRA
PRINCIPAL
AUS CONSULTANTS

CONCERNING

FAIR RATE OF RETURN

RE: UNITED WATER RHODE ISLAND, INC.

JUNE 2011

United Water Rhode Island, Inc.
Table of Contents
to the Financial Supporting Exhibit
of Pauline M. Ahern, CRRA

United Water Rhode Island, Inc.
Summary of Cost of Capital and Fair Rate of Return
Based upon the Estimated Capital Structure at March 31, 2011

Type of Capital	Ratios (1)	Cost Rate	Weighted Cost Rate
Long-Term Debt	47.53%	6.15% (1)	2.92%
Common Equity	52.47%	11.10% (2)	5.82%
Total	100.00%		8.74%

Notes:

(1) Sometimes Company-Provided, sometimes developed in a Schedule.

(2) Based upon informed judgment from the entire study, the principal results of which are summarized on page 2.

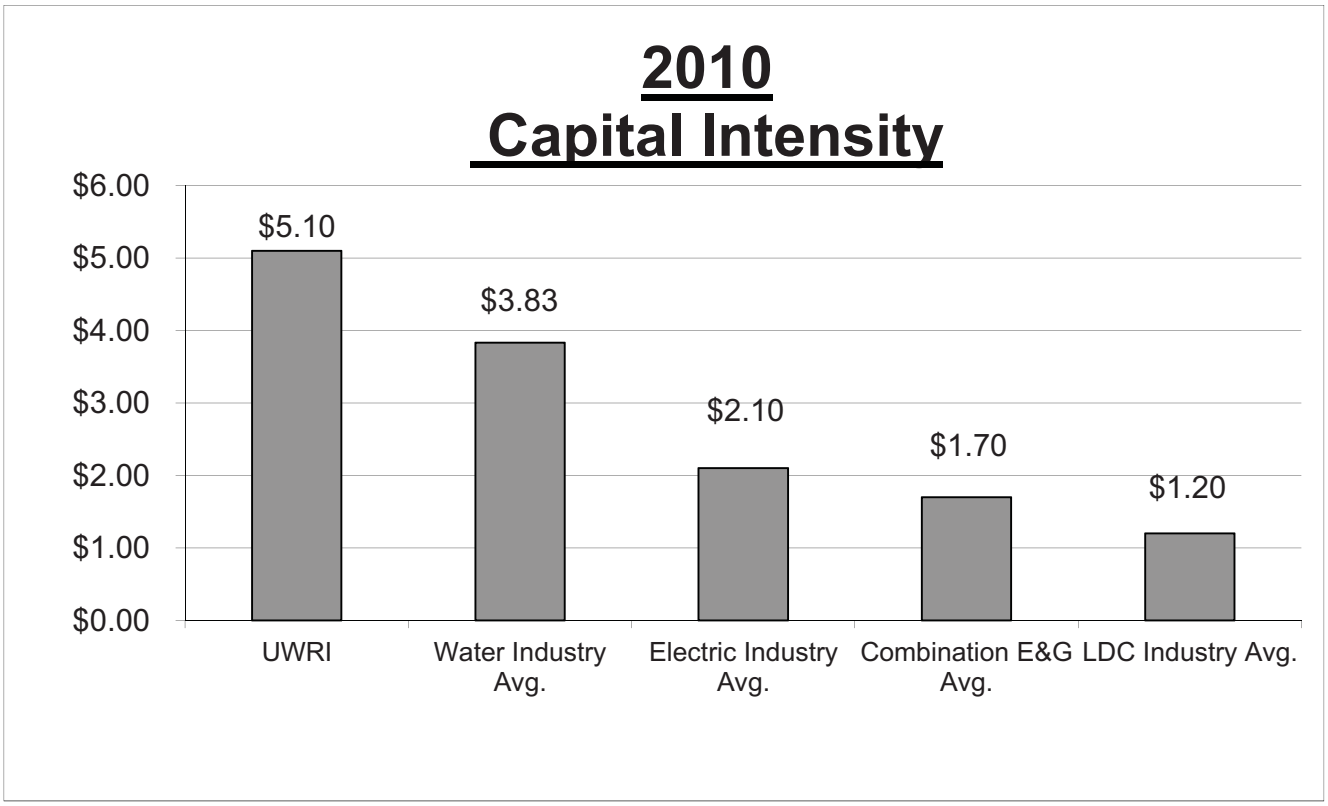
United Water Rhode Island, Inc.
Brief Summary of Common Equity Cost Rate

No.	Principal Methods	Proxy Group of Eight Water Companies
1.	Discounted Cash Flow Model (DCF) (1)	9.81 %
2.	Risk Premium Model (RPM) (2)	10.61
3.	Capital Asset Pricing Model (CAPM) (3)	10.26
4.	Comparable Earnings Model (CEM) (4)	14.50
5.	Indicated Common Equity Cost Rate before Adjustment for Business Risks	10.75 %
6.	Financial Risk Adjustment (5)	(0.21)
8.	Business Risk Adjustment Due to Small Size (6)	0.55
9.	Indicated Common Equity Cost Rate	11.09 %
10.	Recommended Common Equity Cost Rate	11.10 %

Notes:
(1) From Schedule PMA-7.
(2) From page 1 of Schedule PMA-9.
(3) From page 1 of Schedule PMA-10.
(4) From page 2 of Schedule PMA-12.
(5) Financial risk adjustment to reflect the less risky capital structure employed by UWRI relative to the proxy group as detailed in Ms. Ahern's accompanying direct testimony.
(6) Business risk adjustment to reflect 's greater business risk due to its small size relative to the proxy group as detailed in Ms. Ahern's accompanying direct testimony.

United Water Rhode Island, Inc.
2010 Capital Intensity of United Water Rhode Island and
AUS Utility Reports Utility Companies Industry Averages

	Average Net Plant ($ mill)	Average Operating Revenue ($ mill)	Capital Intensity ($)	Capital Intensity of UWRI v. Other Industries (times)
United Water Rhode Island, Inc.	$ 14.85	$ 2.91	$ 5.10	- -
Water Industry Average	$ 1,844.30	$ 482.13	$ 3.83	133.16%
Electric Industry Average	$ 11,842.72	$ 5,632.21	$ 2.10	242.86%
Combination Elec. & Gas Industry Average	$ 10,560.09	$ 6,201.97	$ 1.70	300.00%
Gas Distribution Average	$ 29,105.65	$ 24,236.06	$ 1.20	425.00%



Notes:
Capital Intensity is equal to Net Plant divided by Total Operating Revenue.

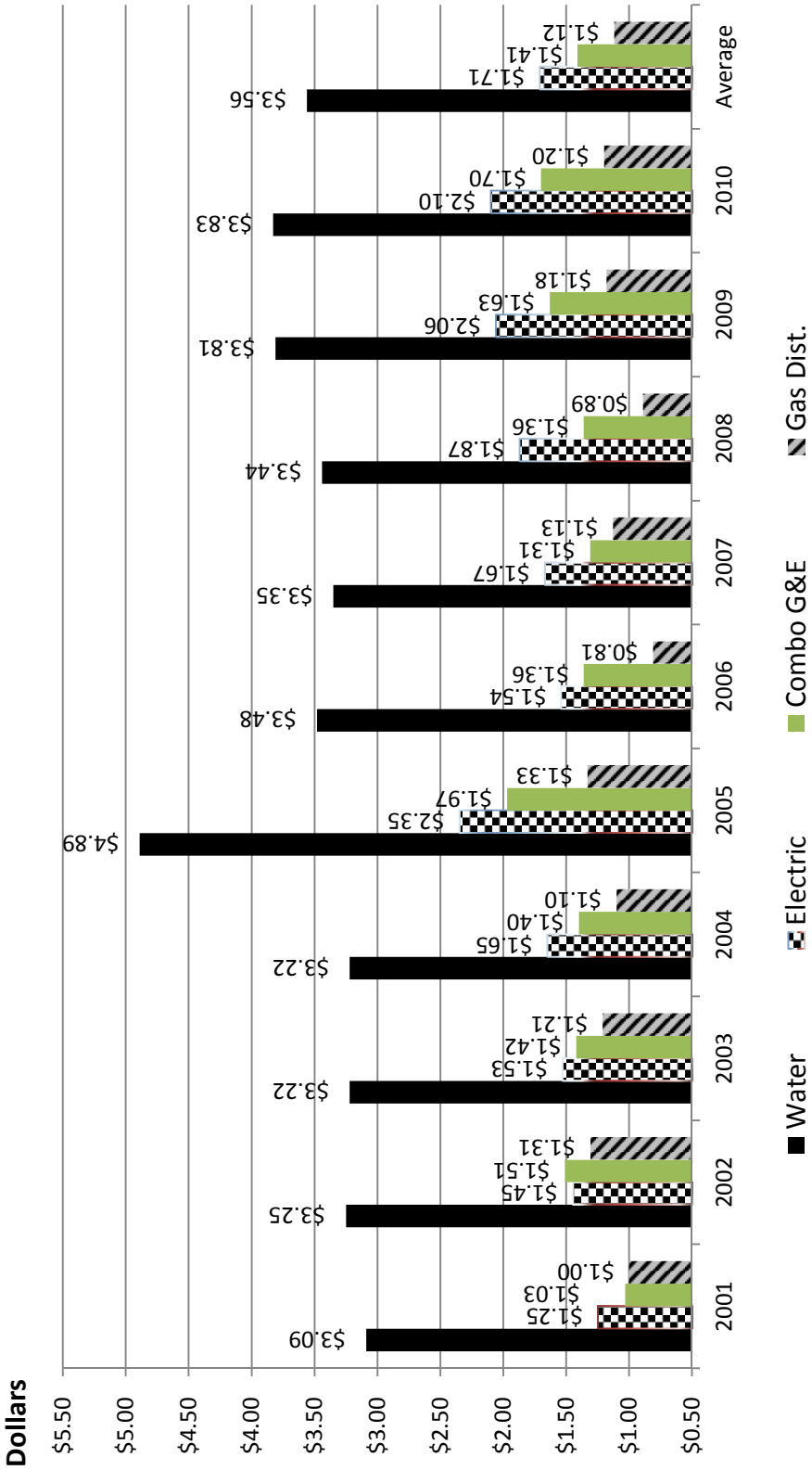
Source of Information:
EDGAR Online's I-Metrix Database
Company Annual Forms 10-K

AUS Utility Reports - April 2011
Published By AUS Consultants

United Water Rhode Island, Inc.

Capital Intensity of the AUS Utility Reports Companies

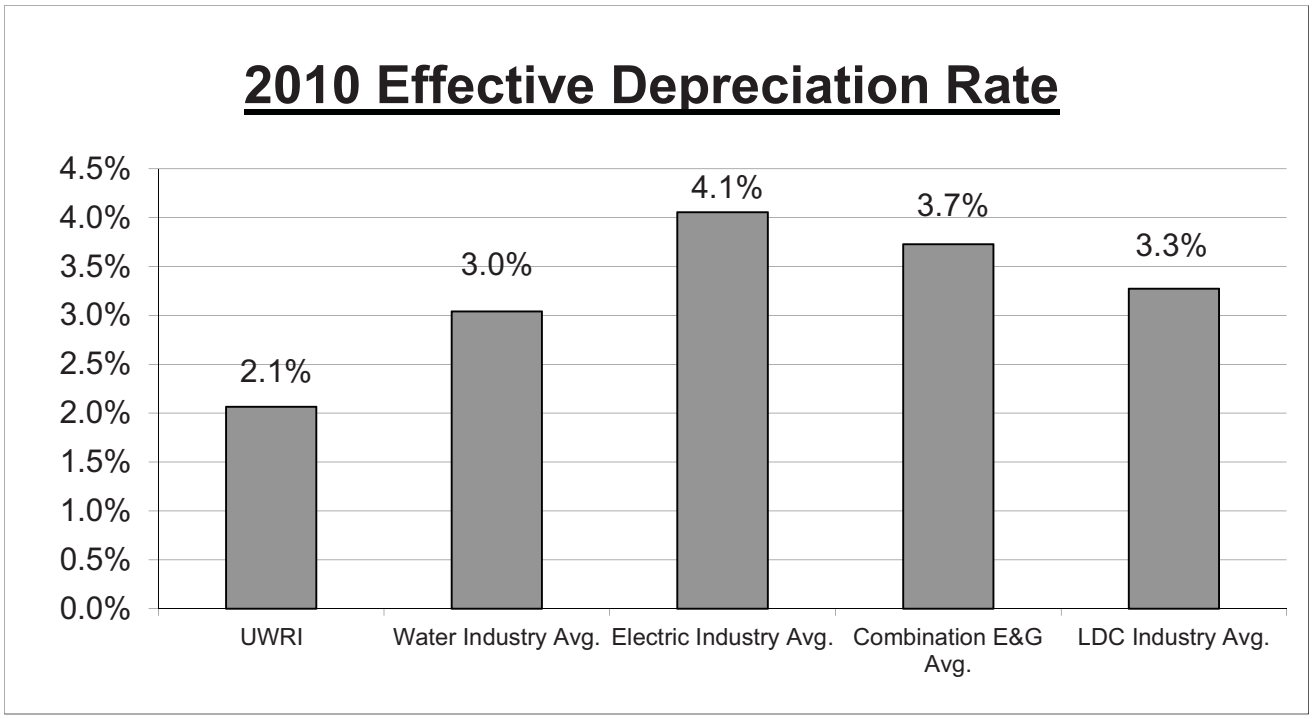
2001 - 2010



Source of Information: SEC Edgar I-Metrix Online Database

United Water Rhode Island, Inc.
2010 Depreciation Rate of United Water Rhode Island and
AUS Utility Reports Utility Companies Industry Averages

	Depreciation Depletion & Amort. Expense ($ mill)	Average Total Gross Plant Less CWIP ($ mill)	Depreciation Rate (%)	Depreciation Rate of UWRI v. Other Industries (times)
United Water Rhode Island, Inc.	$ 0.41	$ 20.03	2.1%	- -
Water Industry Average	$ 61.69	$ 2,028.31	3.0%	70.00%
Electric Industry Average	$ 581.88	$ 14,344.68	4.1%	51.22%
Combination Elec. & Gas Industry Average	$ 541.94	$ 14,532.61	3.7%	56.76%
LDC Gas Distribution Industry Average	$ 139.87	$ 4,271.77	3.3%	63.64%



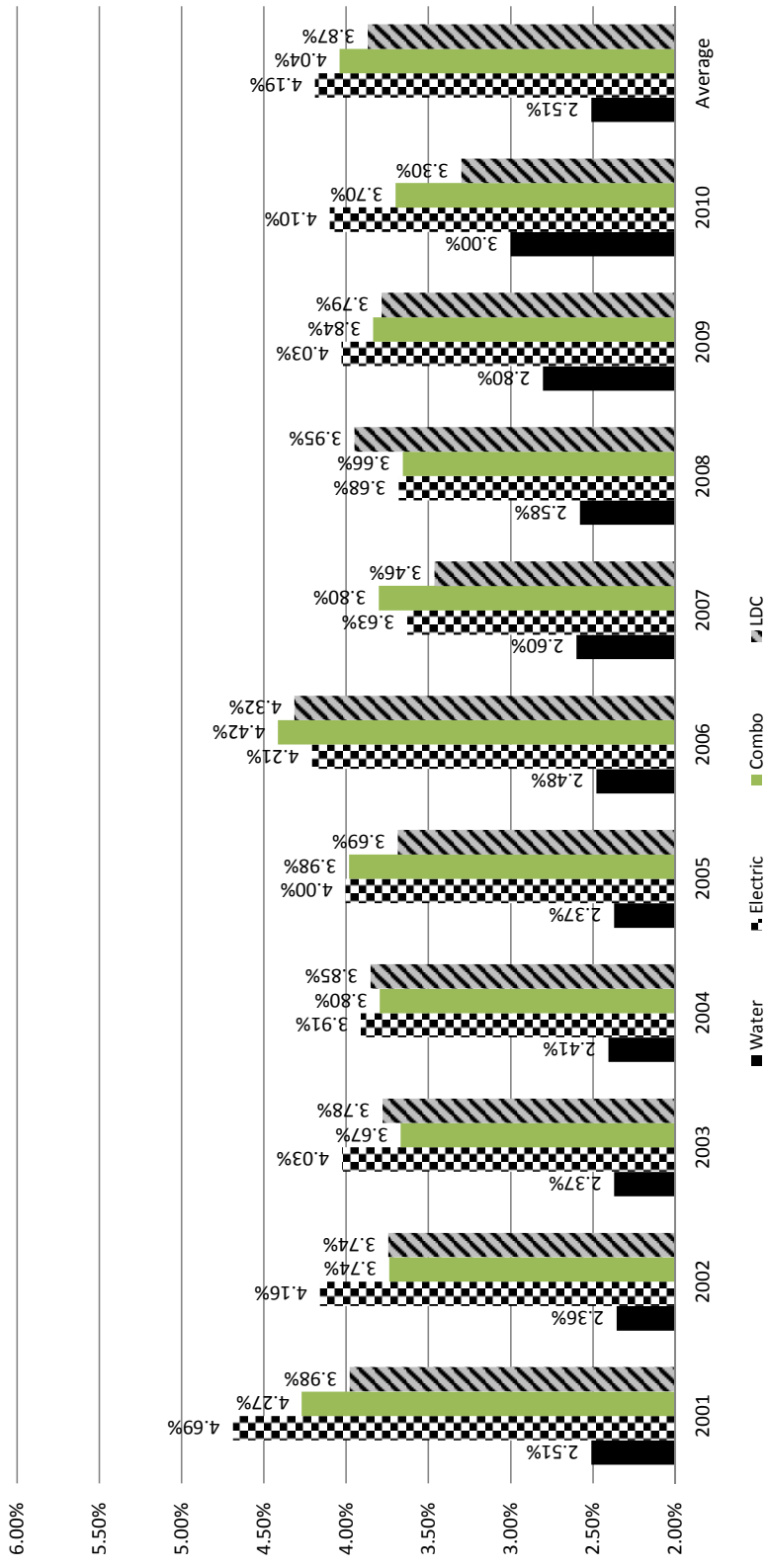
Notes:
Effective Depreciation Rate is equal to Depreciation, Depletion and Amortization Expense divided by average beginning and ending year's Gross Plant minus Construction Work in Progress.

Source of Information:
EDGAR Online's I-Metrix Database
Company Annual Forms 10-K

AUS Utility Report - April 2011
Published by AUS Consultants

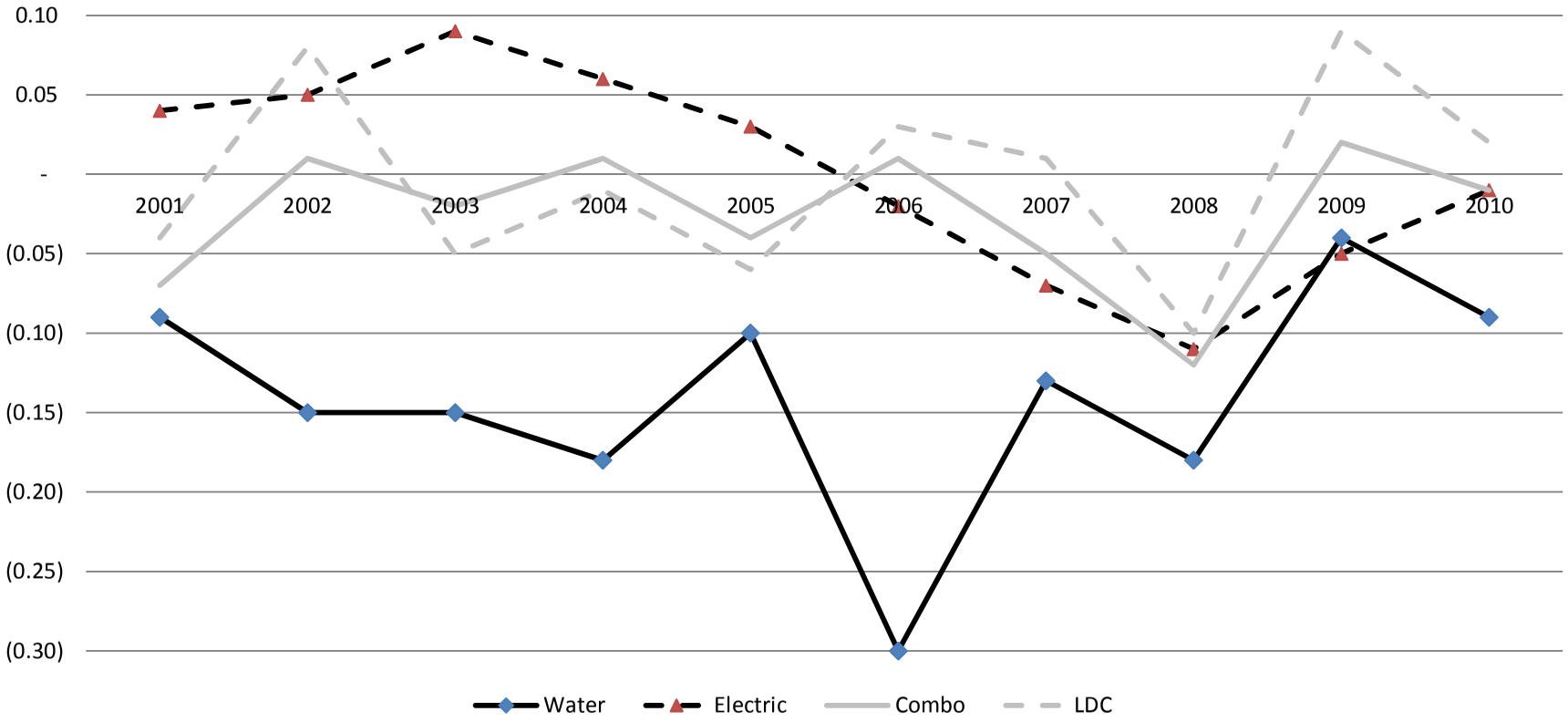
United Water Rhode Island, Inc.

Depreciation Rates for the AUS Utility Reports Companies 2001-2010



Source of Information: SEC Edgar I-Metrix Online Database

United Water Rhode Island, Inc.
Free Cash Flow / Operating Revenues
for the AUS Utility Reports Companies
2001 - 2010

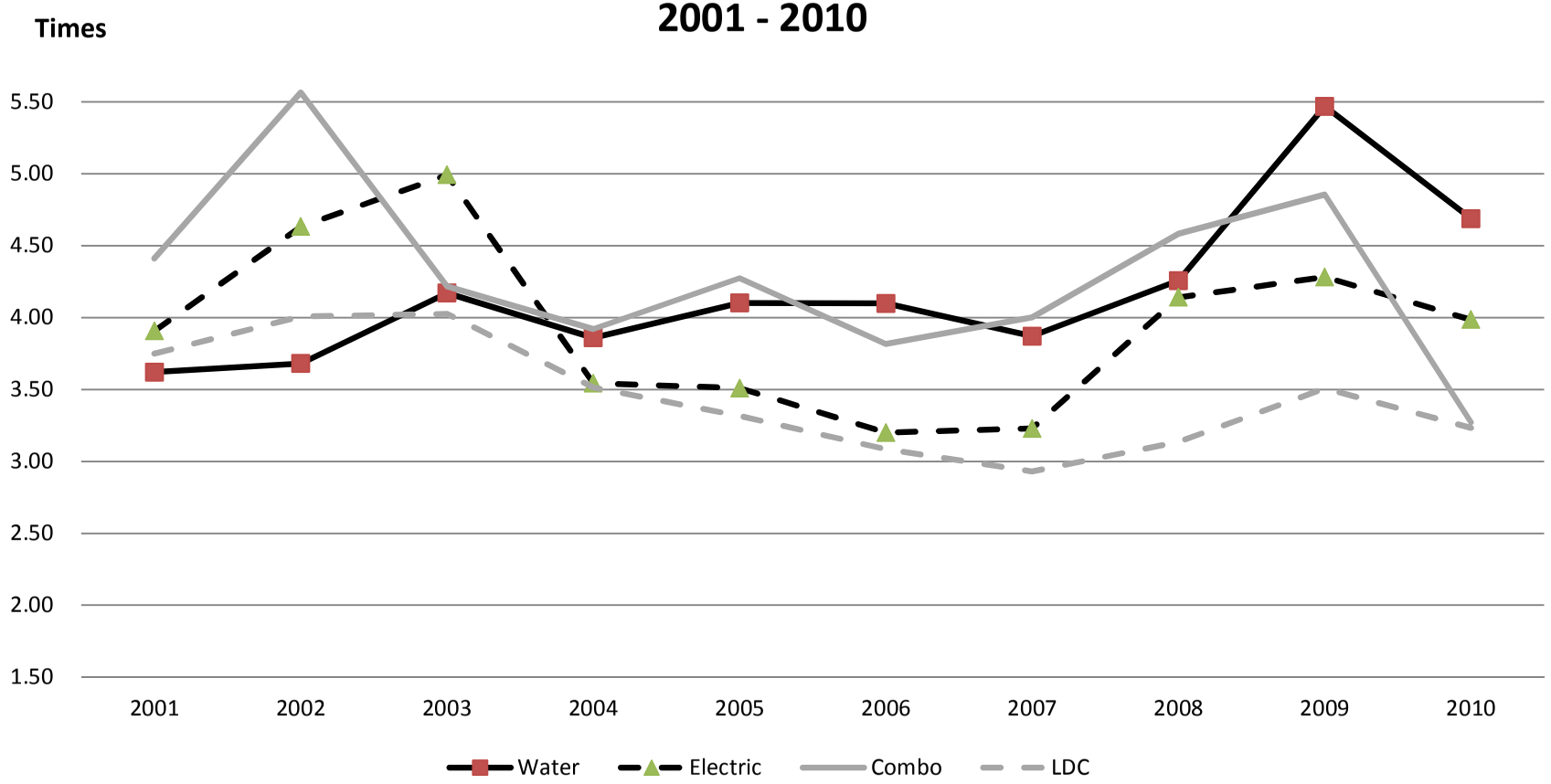


Source of Information: SEC Edgar I-Metrix Online Database

United Water Rhode Island, Inc.

Total Debt / EBITDA for the AUS Utility Reports Companies

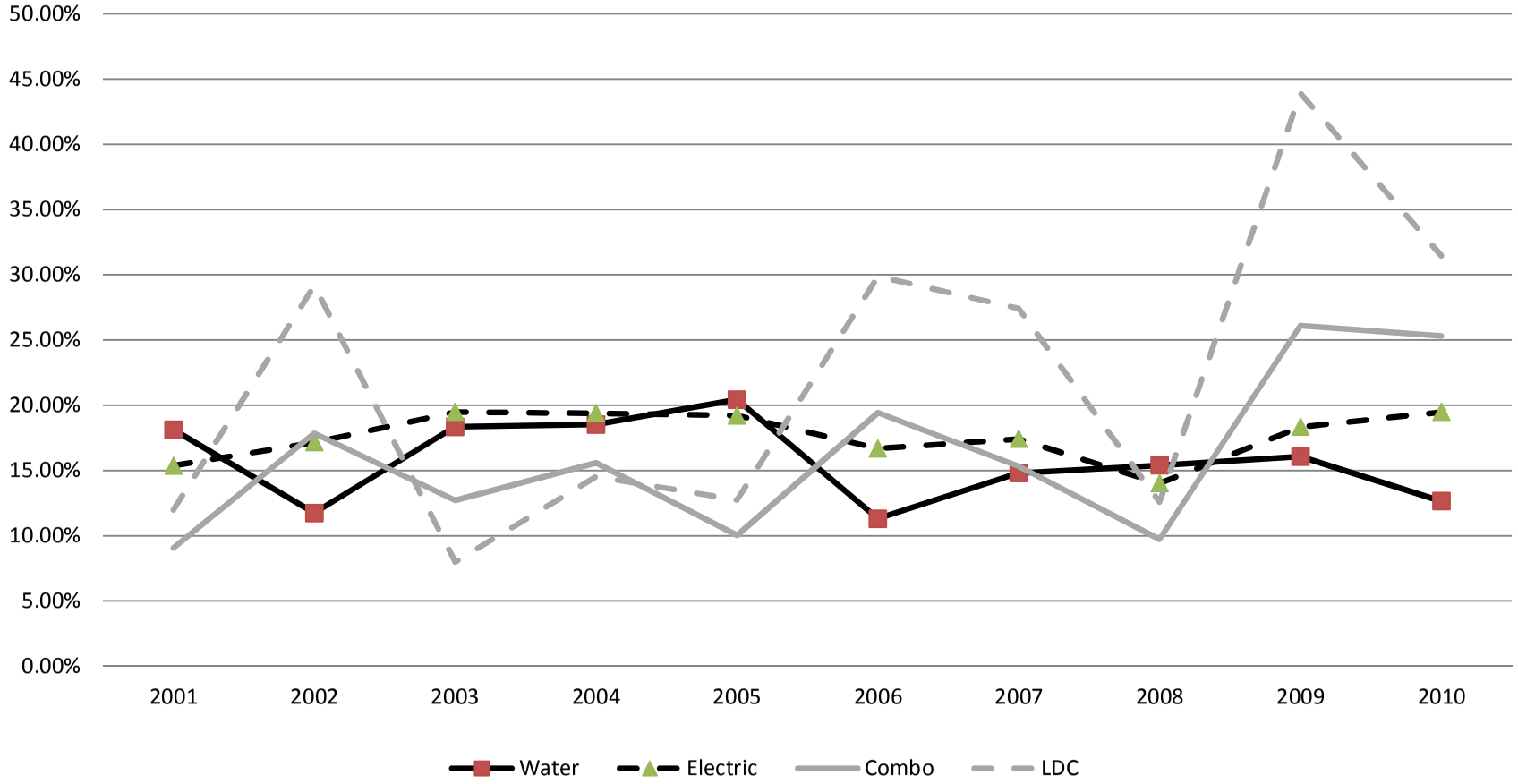
2001 - 2010



Source of Information: SEC Edgar I-Metrix Online Database

Exhibit No.__
Schedule PMA-3
Page 1 of 10

United Water Rhode Island, Inc.
Funds From Ops / Total Debt for the AUS Utility Reports Cos.
2001- 2010

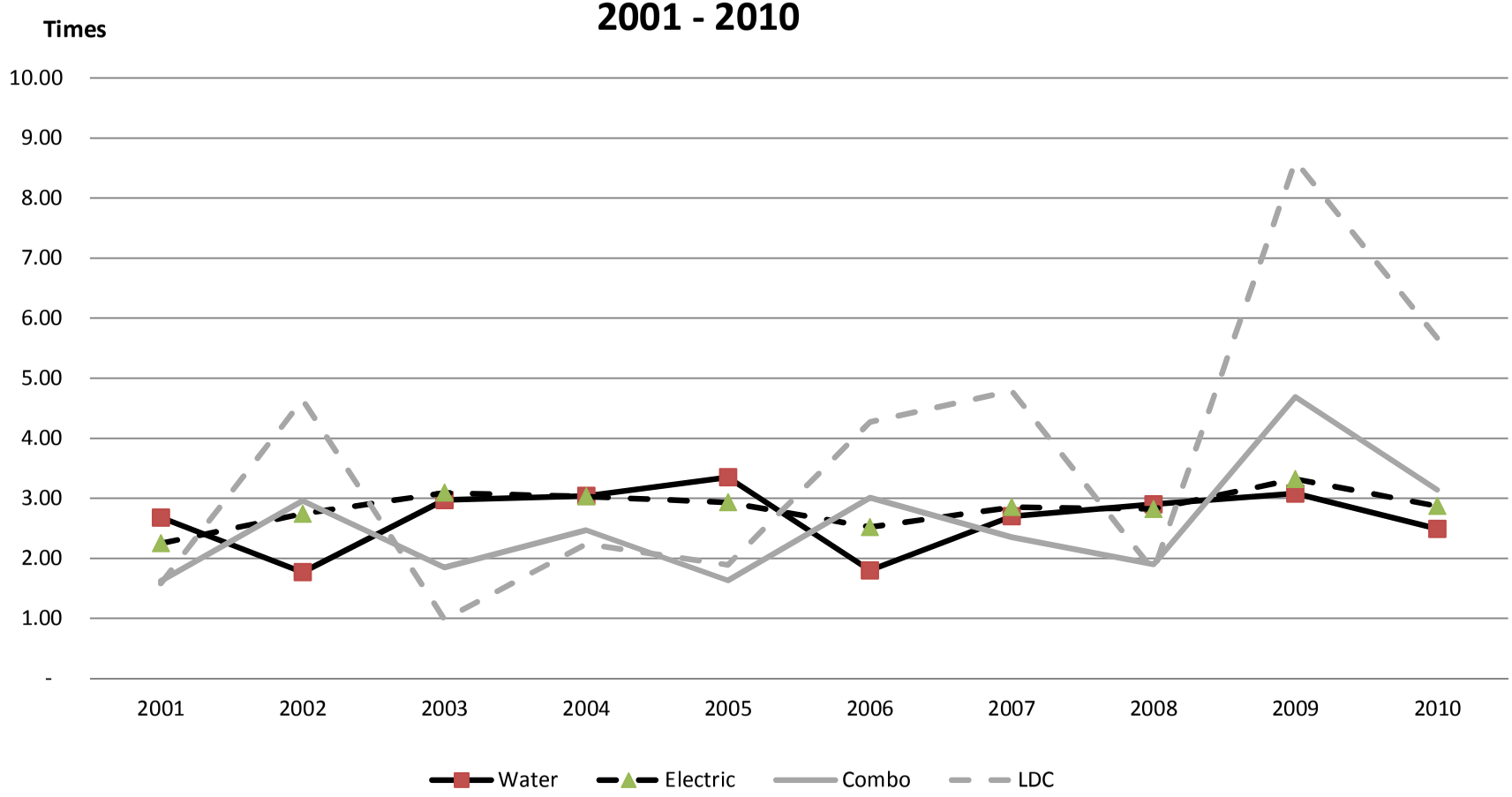


Source of Information: SEC Edgar I-Metrix Online Database

United Water Rhode Island, Inc.

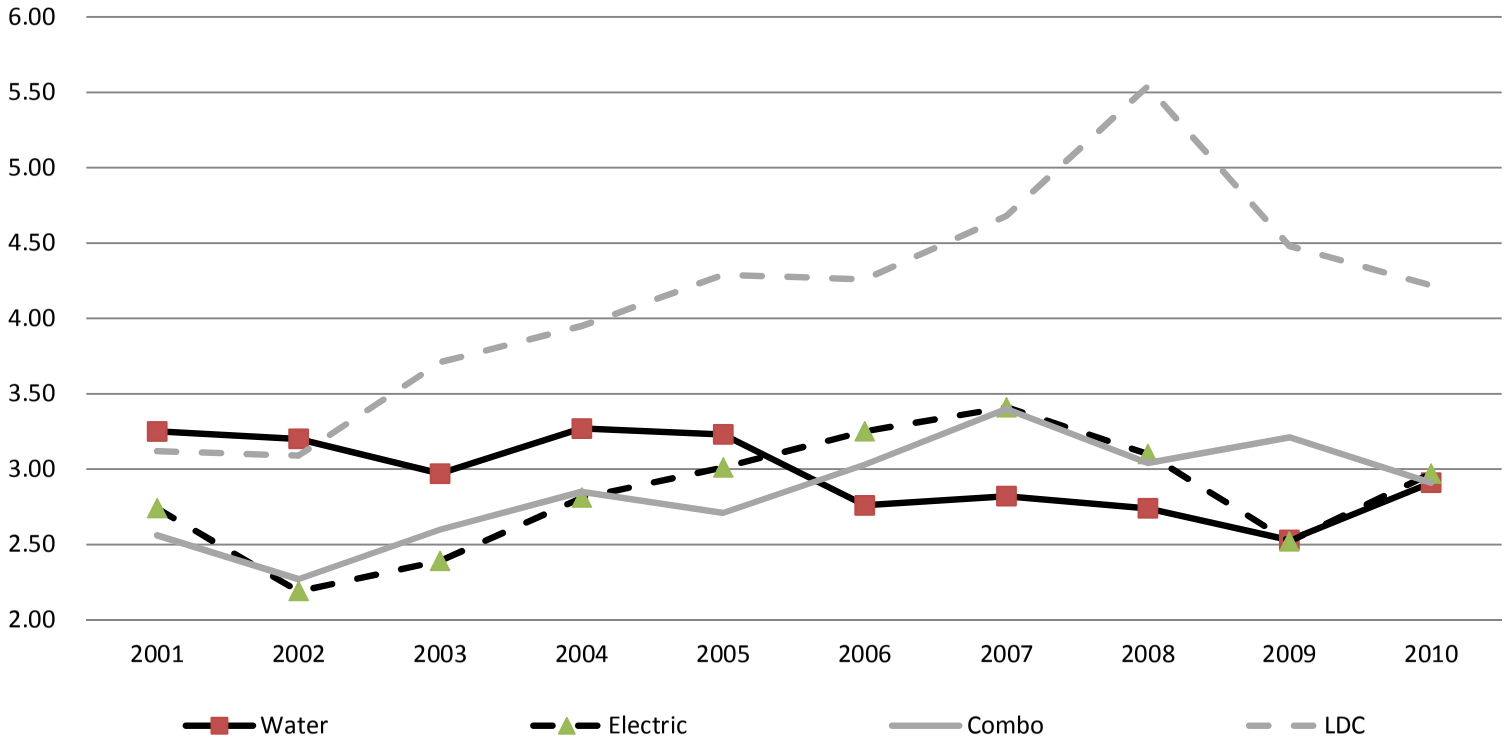
Funds From Ops / Interest Cov. for the AUS Utility Reports Cos.

2001 - 2010



Source of Information: SEC Edgar I-Metrix Online Database

United Water Rhode Island, Inc.
Before-Inc. Tax / Interest Cov. for the AUS Utility Reports Cos.
2001 - 2010

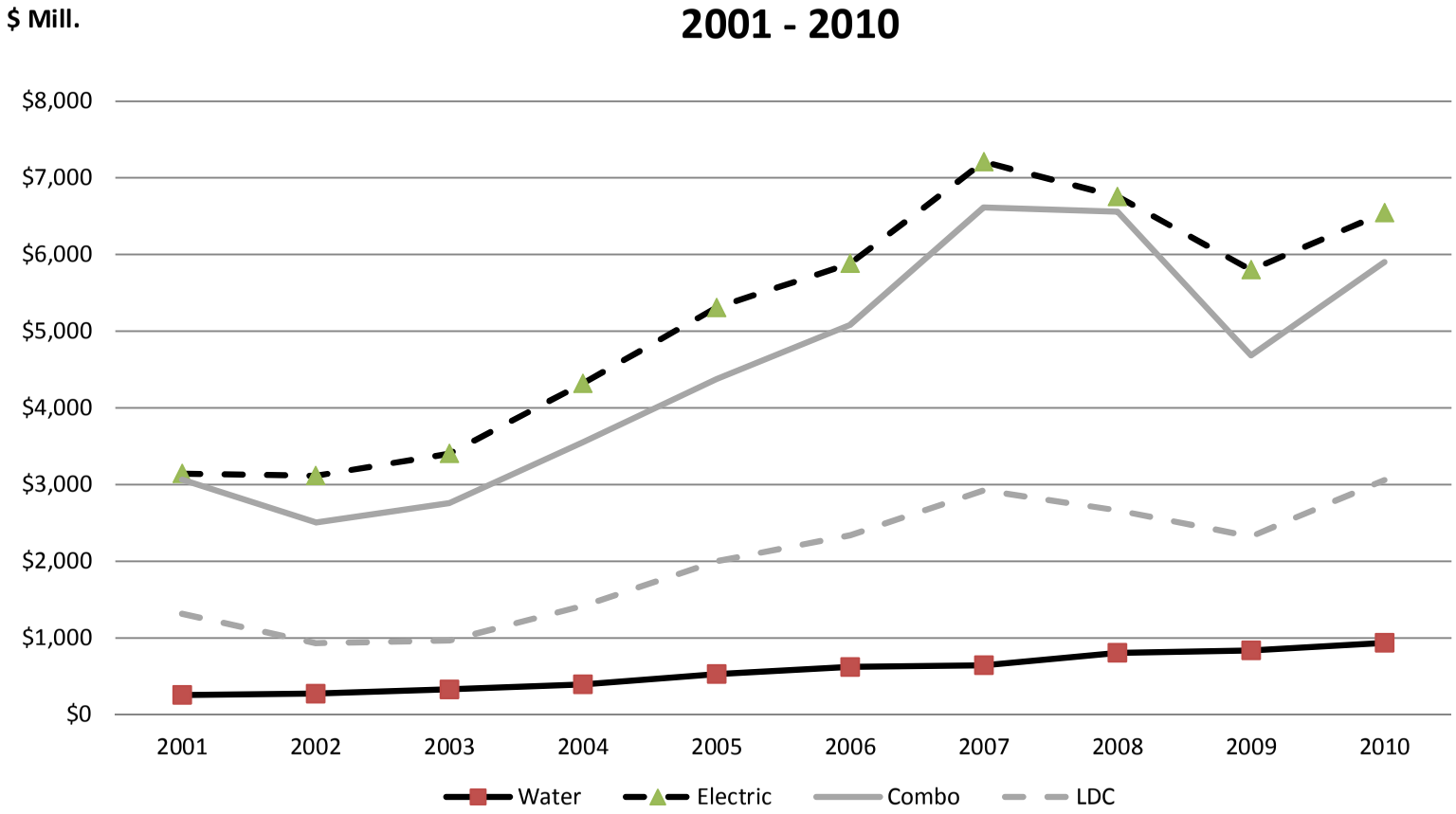


Source of Information: SEC Edgar I-Metrix Online Databae

United Water Rhode Island, Inc.

Market Capitalization for the AUS Utility Reports Companies

2001 - 2010



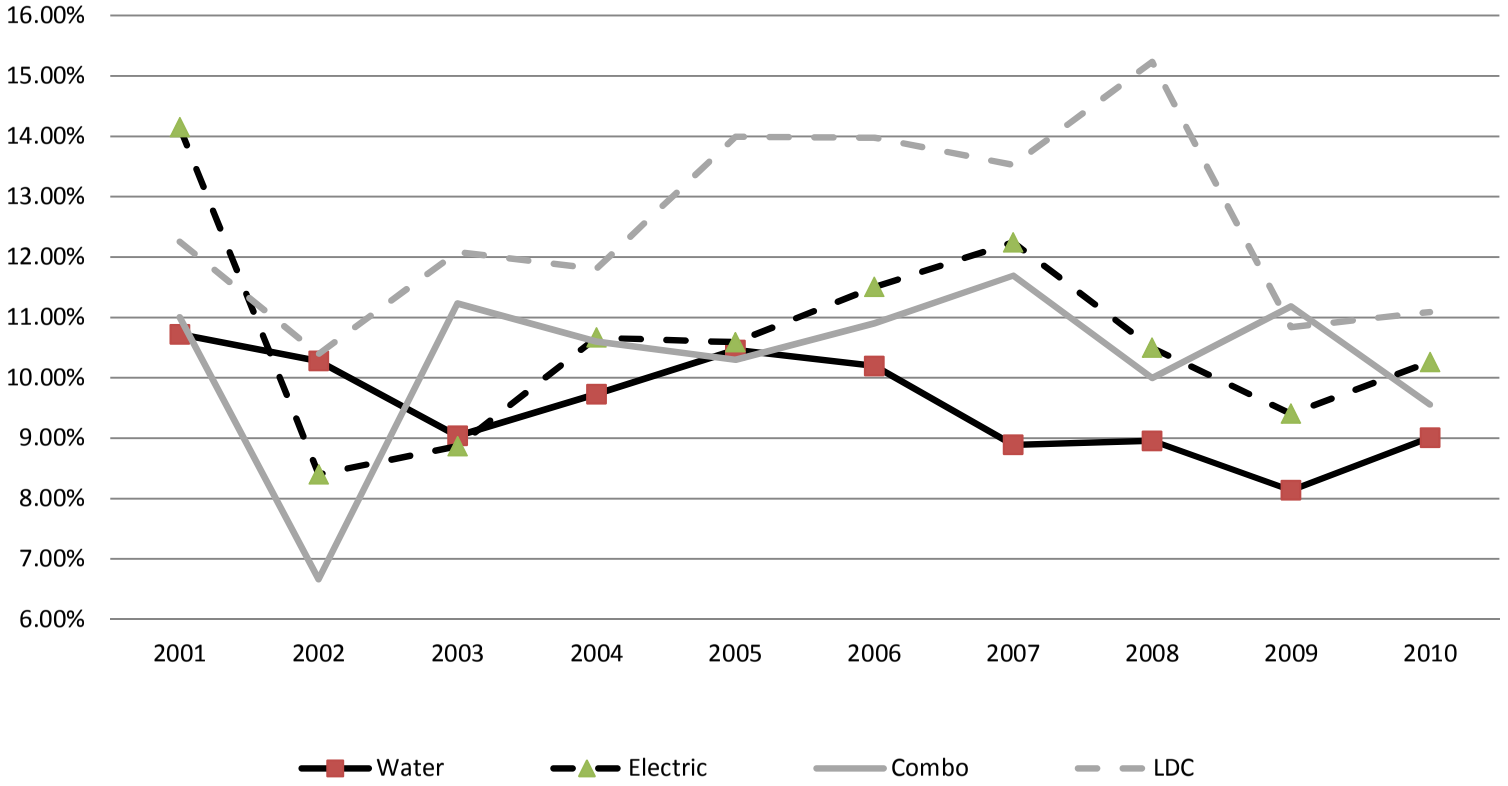
Source of Information: SEC Edgar I-Metrix Online Database

Exhibit No.__
Schedule PMA-3
Page 5 of 10

United Water Rhode Island, Inc.

Earned Returns on Common Equity for the AUS Utility Reports Cos.

2001 - 2010

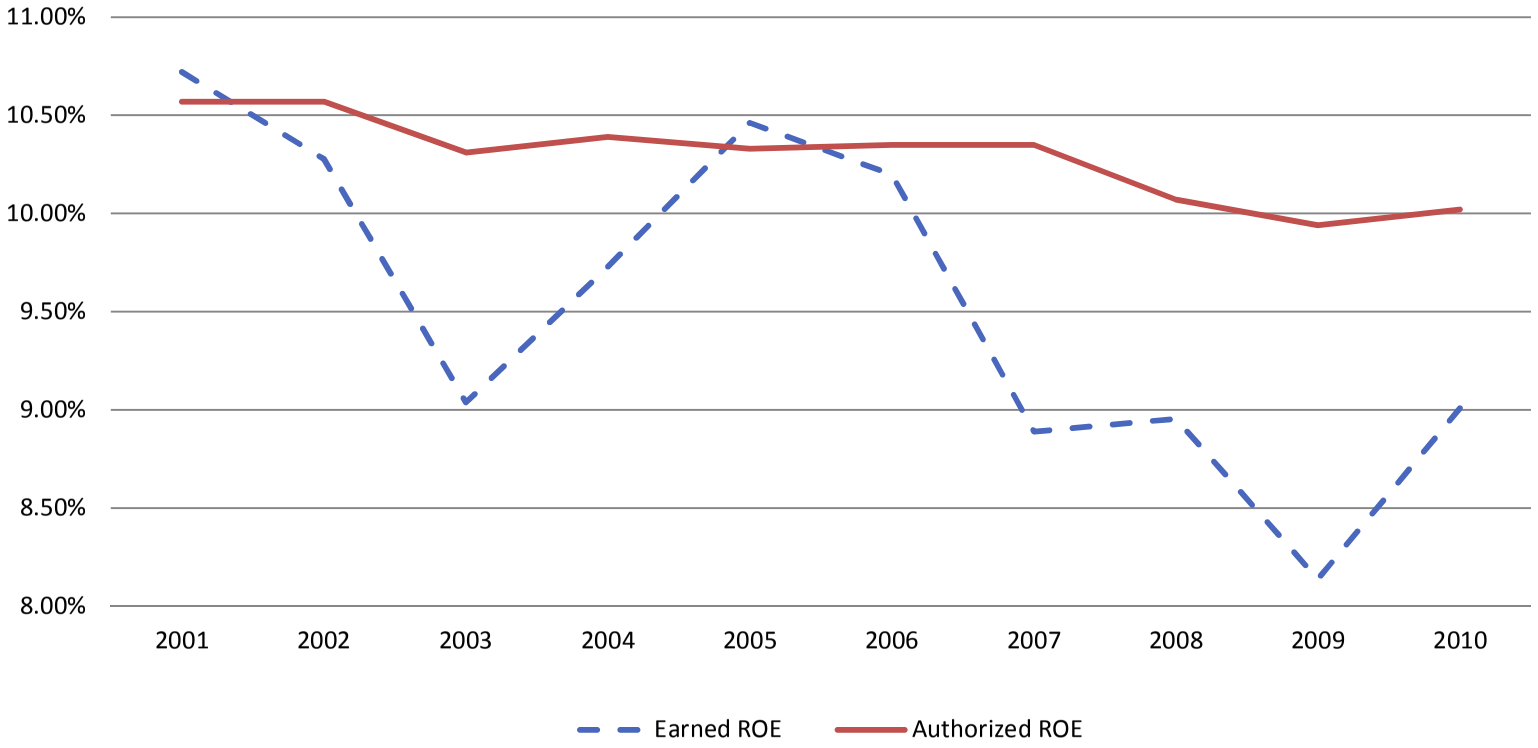


Source of Information: SEC Edgar I-Metrix Online Database

United Water Rhode Island, Inc.

Earned ROE v Authorized ROE for the AUS Utility Reports Water Companies

2001 - 2010

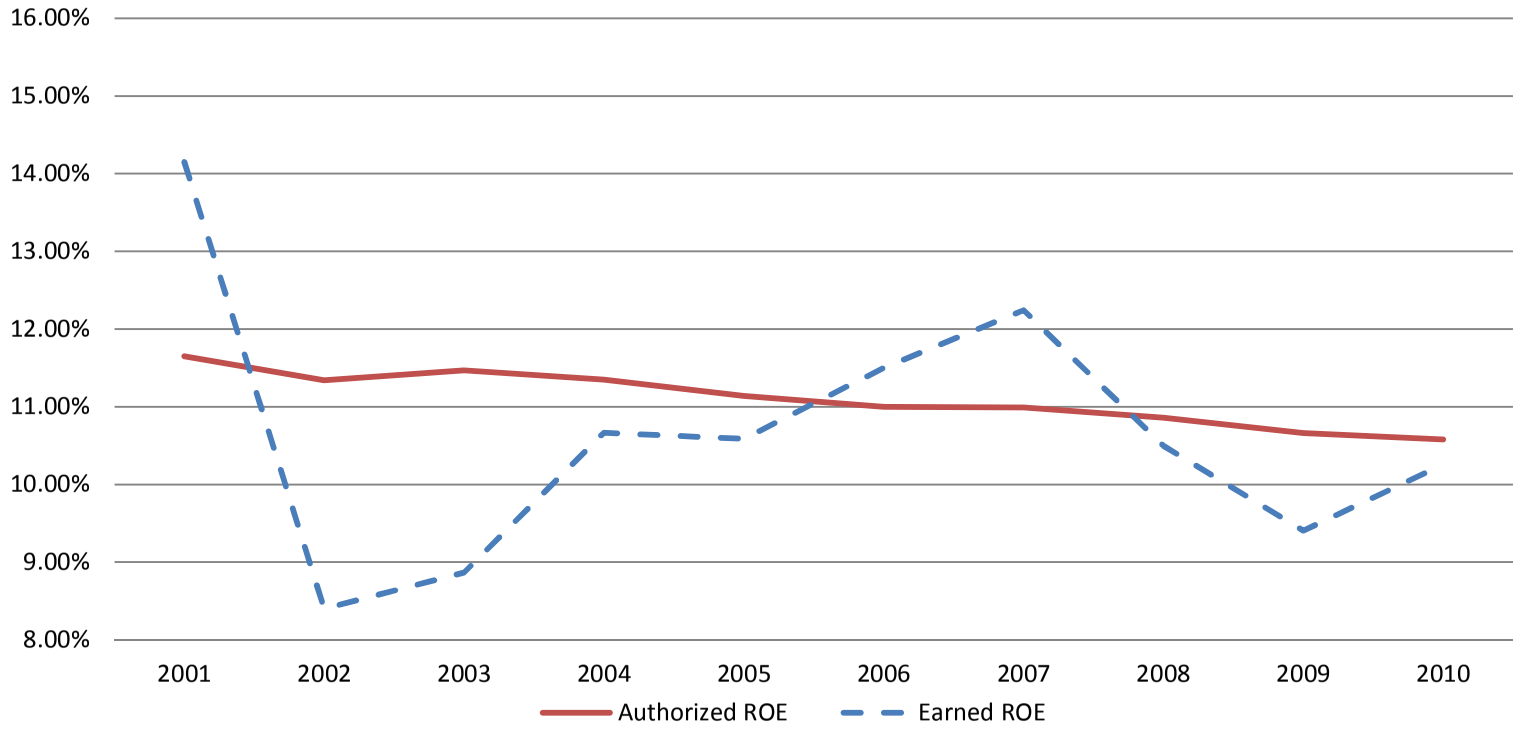


Source of Information: SEC Edgar I-Metrix Online Database & AUS Utility Reports

United Water Rhode Island, Inc.

Earned ROE v Authorized ROE for the AUS Utility Reports Electric Companies

2001 - 2010

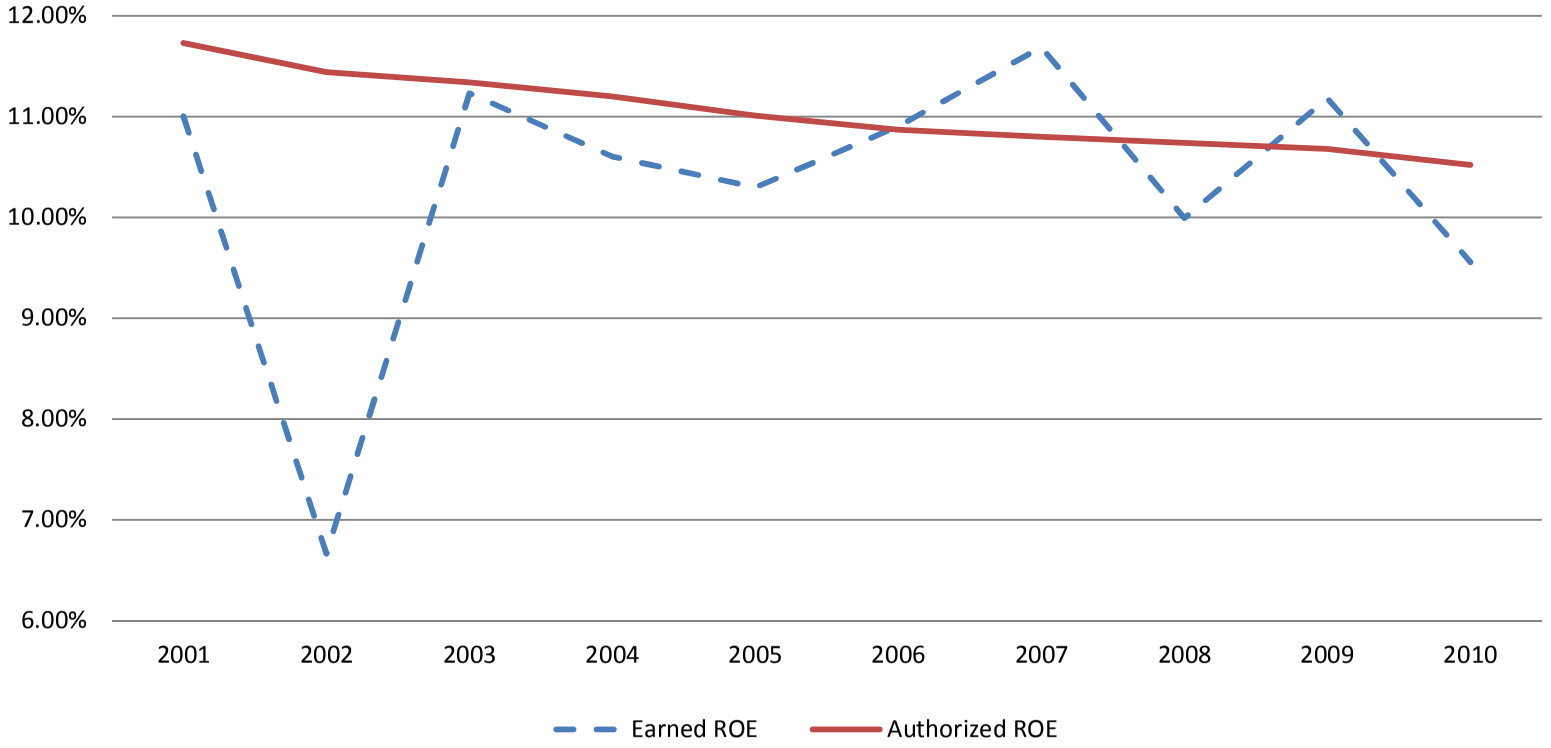


Source of Information: SEC Edgar I-Metrix Online Database & AUS Utility Reports

United Water Rhode Island, Inc.

Earned ROE v Authorized ROE for the AUS Utility Reports Combination Companies

2001 - 2010

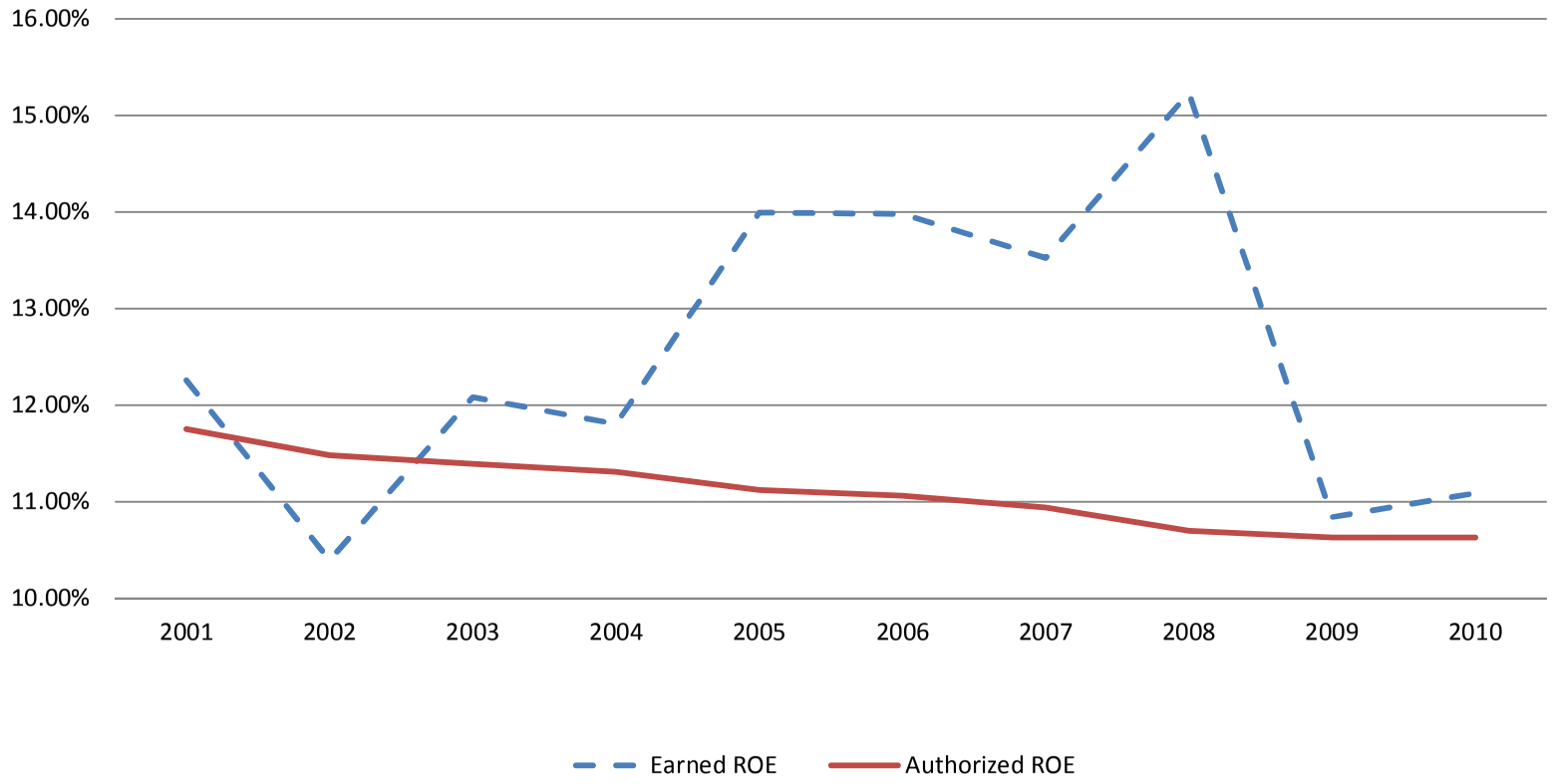


Source of Information: SEC Edgar I-Metrix Online Database & AUS Utility Reports

United Water Rhode Island, Inc.

Earned ROE v Authorized ROE for the AUS Utility Reports LDC Companies

2001 - 2010



Source of Information: SEC Edgar I-Metrix Online Database & AUS Utility Reports

STANDARD &POOR'S

RATINGSDIRECT®

May 27, 2009

Criteria | Corporates | General:

Criteria Methodology: Business Risk/Financial Risk Matrix Expanded

Primary Credit Analysts:
Solomon B Samson, New York (1) 212-438-7653; sol_samson@standardandpoors.com
Emmanuel Dubois-Pelerin, Paris (33) 1-4420-6673; emmanuel_dubois-pelerin@standardandpoors.com

Table Of Contents

Criteria | Corporates | General:

Criteria Methodology: Business Risk/Financial Risk Matrix Expanded

(Editor's Note: In the previous version of this article published on May 26, certain of the rating outcomes in the table 1 matrix were missated. A corrected version follows.)

Standard & Poor's Ratings Services is refining its methodology for corporate ratings related to its business risk/financial risk matrix, which we published as part of 2008 Corporate Ratings Criteria on April 15, 2008, on RatingsDirect at www.ratingsdirect.com and Standard & Poor's Web site at www.standardandpoors.com.

This article amends and supersedes the criteria as published in Corporate Ratings Criteria, page 21, and the articles listed in the "Related Articles" section at the end of this report.

This article is part of a broad series of measures announced last year to enhance our governance, analytics, dissemination of information, and investor education initiatives. These initiatives are aimed at augmenting our independence, strengthening the rating process, and increasing our transparency to better serve the global markets.

We introduced the business risk/financial risk matrix four years ago. The relationships depicted in the matrix represent an essential element of our corporate analytical methodology.

We are now expanding the matrix, by adding one category to both business and financial risks (see table 1). As a result, the matrix allows for greater differentiation regarding companies rated lower than investment grade (i.e., 'BB' and below).

Table 1

Business And Financial Risk Profile Matrix

Business Risk Profile	Financial Risk Profile					
	Minimal	Modest	Intermediate	Significant	Aggressive	Highly Leveraged
Excellent	AAA	AA	A	A-	BBB	--
Strong	AA	A	A-	BBB	BB	BB-
Satisfactory	A-	BBB+	BBB	BB+	BB-	B+
Fair	--	BBB-	BB+	BB	BB-	B
Weak	--	--	BB	BB-	B+	B-
Vulnerable	--	--	--	B+	B	CCC+

These rating outcomes are shown for guidance purposes only. Actual rating should be within one notch of indicated rating outcomes.

The rating outcomes refer to issuer credit ratings. The ratings indicated in each cell of the matrix are the midpoints of a range of likely rating possibilities. This range would ordinarily span one notch above and below the indicated rating.

Business Risk/Financial Risk Framework

Our corporate analytical methodology organizes the analytical process according to a common framework, and it divides the task into several categories so that all salient issues are considered. The first categories involve fundamental business analysis; the financial analysis categories follow.

Our ratings analysis starts with the assessment of the business and competitive profile of the company. Two companies with identical financial metrics can be rated very differently, to the extent that their business challenges and prospects differ. The categories underlying our business and financial risk assessments are:

Business risk

- Country risk
- Industry risk
- Competitive position
- Profitability/Peer group comparisons

Financial risk

- Accounting
- Financial governance and policies/risk tolerance
- Cash flow adequacy
- Capital structure/asset protection
- Liquidity/short-term factors

We do not have any predetermined weights for these categories. The significance of specific factors varies from situation to situation.

Updated Matrix

We developed the matrix to make explicit the rating outcomes that are typical for various business risk/financial risk combinations. It illustrates the relationship of business and financial risk profiles to the issuer credit rating.

We tend to weight business risk slightly more than financial risk when differentiating among investment-grade ratings. Conversely, we place slightly more weight on financial risk for speculative-grade issuers (see table 1, again). There also is a subtle compounding effect when both business risk and financial risk are aligned at extremes (i.e., excellent/minimal and vulnerable/highly leveraged.)

The new, more granular version of the matrix represents a refinement--not any change in rating criteria or standards--and, consequently, holds no implications for any changes to existing ratings. However, the expanded matrix should enhance the transparency of the analytical process.

Financial Benchmarks

Table 2

Financial Risk Indicative Ratios (Corporates)

	FFO/Debt (%)	Debt/EBITDA (x)	Debt/Capital (%)
Minimal	greater than 60	less than 1.5	less than 25
Modest	45-60	1.5-2	25-35
Intermediate	30-45	2-3	35-45
Significant	20-30	3-4	45-50
Aggressive	12-20	4-5	50-60
Highly Leveraged	less than 12	greater than 5	greater than 60

How To Use The Matrix--And Its Limitations

The rating matrix indicative outcomes are what we typically observe--but are not meant to be precise indications or guarantees of future rating opinions. Positive and negative nuances in our analysis may lead to a notch higher or lower than the outcomes indicated in the various cells of the matrix.

In certain situations there may be specific, overarching risks that are outside the standard framework, e.g., a liquidity crisis, major litigation, or large acquisition. This often is the case regarding credits at the lowest end of the credit spectrum--i.e., the 'CCC' category and lower. These ratings, by definition, reflect some impending crisis or acute vulnerability, and the balanced approach that underlies the matrix framework just does not lend itself to such situations.

Similarly, some matrix cells are blank because the underlying combinations are highly unusual--and presumably would involve complicated factors and analysis.

The following hypothetical example illustrates how the tables can be used to better understand our rating process (see tables 1 and 2).

We believe that Company ABC has a satisfactory business risk profile, typical of a low investment-grade industrial issuer. If we believed its financial risk were intermediate, the expected rating outcome should be within one notch of 'BBB'. ABC's ratios of cash flow to debt (35%) and debt leverage (total debt to EBITDA of 2.5x) are indeed characteristic of intermediate financial risk.

It might be possible for Company ABC to be upgraded to the 'A' category by, for example, reducing its debt burden to the point that financial risk is viewed as minimal. Funds from operations (FFO) to debt of more than 60% and debt to EBITDA of only 1.5x would, in most cases, indicate minimal.

Conversely, ABC may choose to become more financially aggressive--perhaps it decides to reward shareholders by borrowing to repurchase its stock. It is possible that the company may fall into the 'BB' category if we view its financial risk as significant. FFO to debt of 20% and debt to EBITDA 4x would, in our view, typify the significant financial risk category.

Still, it is essential to realize that the financial benchmarks are guidelines, neither gospel nor guarantees. They can vary in nonstandard cases: For example, if a company's financial measures exhibit very little volatility, benchmarks may be somewhat more relaxed.

Moreover, our assessment of financial risk is not as simplistic as looking at a few ratios. It encompasses:

- a view of accounting and disclosure practices;
- a view of corporate governance, financial policies, and risk tolerance;
- the degree of capital intensity, flexibility regarding capital expenditures and other cash needs, including acquisitions and shareholder distributions; and
- various aspects of liquidity--including the risk of refinancing near-term maturities.

The matrix addresses a company's standalone credit profile, and does not take account of external influences, which would pertain in the case of government-related entities or subsidiaries that in our view may benefit or suffer from affiliation with a stronger or weaker group. The matrix refers only to local-currency ratings, rather than foreign-currency ratings, which incorporate additional transfer and convertibility risks. Finally, the matrix does not apply to project finance or corporate securitizations.

Related Articles

Industrials' Business Risk/Financial Risk Matrix--A Fundamental Perspective On Corporate Ratings, published April 7, 2005, on RatingsDirect.

Proxy Group of Eight Water Companies
CAPITALIZATION AND FINANCIAL STATISTICS (1)
2006 - 2010, Inclusive

	2010	2009	2008	2007	2006	
			(MILLIONS OF DOLLARS)			
CAPITALIZATION STATISTICS						
AMOUNT OF CAPITAL EMPLOYED						
TOTAL PERMANENT CAPITAL	$1,901.851	$1,821.345	$1,704.698	$1,733.988	$587.348	
SHORT-TERM DEBT	$56.420	$31.879	$92.081	$41.918	$24.914	
TOTAL CAPITAL EMPLOYED	$1,958.271	$1,853.224	$1,796.779	$1,775.906	$612.262	
INDICATED AVERAGE CAPITAL COST RATES (2)						
TOTAL DEBT	5.37 %	5.31 %	5.56 %	5.95 %	6.31 %	
PREFERRED STOCK	3.96	3.96	4.51	3.46	4.07	
CAPITAL STRUCTURE RATIOS						5 YEAR AVERAGE
BASED ON TOTAL PERMANENT CAPITAL:						
LONG-TERM DEBT	50.74 %	50.39 %	49.44 %	49.20 %	47.10 %	49.37 %
PREFERRED STOCK	0.21	0.24	0.25	0.35	0.58	0.33
COMMON EQUITY	49.05	49.37	50.31	50.45	52.32	50.30
TOTAL	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
BASED ON TOTAL CAPITAL:						
TOTAL DEBT, INCLUDING SHORT-TERM	52.82 %	52.57 %	52.46 %	50.44 %	48.50 %	51.36 %
PREFERRED STOCK	0.20	0.21	0.24	0.34	0.57	0.31
COMMON EQUITY	46.98	47.22	47.30	49.22	50.93	48.33
TOTAL	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
FINANCIAL STATISTICS						
FINANCIAL RATIOS - MARKET BASED						
EARNINGS / PRICE RATIO	5.27 %	3.39 %	1.90 %	4.22 %	4.60 %	3.88 %
MARKET / AVERAGE BOOK RATIO	176.11	164.50	173.52	220.93	227.50	192.51
DIVIDEND YIELD	3.50	3.83	3.40	3.15	3.19	3.41
DIVIDEND PAYOUT RATIO	65.69	58.58	62.15	71.98	72.29	66.14
RATE OF RETURN ON AVERAGE BOOK COMMON EQUITY	9.09 %	6.84 %	6.26 %	6.99 %	10.17 %	7.87 %
TOTAL DEBT / EBITDA (3)	4.54 X	5.48 X	10.12 X	5.77 X	4.31 X	6.04 X
FUNDS FROM OPERATIONS / TOTAL DEBT (4)	17.55 %	16.68 %	16.76 %	15.17 %	17.88 %	16.81 %
TOTAL DEBT / TOTAL CAPITAL	52.82 %	52.57 %	52.46 %	50.44 %	48.50 %	51.36 %

Notes:

(1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group, and are based upon financial statements as originally reported in each year.

(2) Computed by relating actual total debt interest or preferred stock dividends booked to average of beginning and ending total debt or preferred stock reported to be outstanding.

(3) Total debt as a percentage of EBITDA (Earnings before Interest, Income Taxes, Depreciation and Amortization).

Source of Information: I-Metrix Database
Company SEC Form 10-K

Capital Structure Based upon Total Permanent Capital for the
Proxy Group of Eight Water Companies
2006 - 2010, Inclusive

	2010	2009	2008	2007	2006	5 YEAR AVERAGE
American States Water Co.						
Long-Term Debt	44.30 %	46.95 %	46.25 %	46.99 %	48.61 %	46.62 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	55.70	53.05	53.75	53.01	51.39	53.38
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
American Water Works Co., Inc.						
Long-Term Debt	56.73 %	57.00 %	53.75 %	51.07 %	N/A %	54.63 %
Preferred Stock	0.29	0.30	0.32	0.31	N/A	0.31
Common Equity	42.98	42.69	45.93	48.62	N/A	45.06
Total Capital	100.00 %	99.99 %	100.00 %	100.00 %	N/A %	100.00 %
Aqua America, Inc.						
Long-Term Debt	57.05 %	56.59 %	54.21 %	55.88 %	51.55 %	55.06 %
Preferred Stock	0.02	0.02	0.09	0.09	0.10	0.06
Common Equity	42.93	43.39	45.70	44.03	48.35	44.88
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
California Water Service Group						
Long-Term Debt	52.51 %	47.93 %	41.88 %	42.86 %	43.47 %	45.73 %
Preferred Stock	0.00	0.00	0.00	0.51	0.51	0.20
Common Equity	47.49	52.07	58.12	56.63	56.02	54.07
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Connecticut Water Service, Inc.						
Long-Term Debt	49.32 %	50.59 %	46.94 %	47.76 %	44.42 %	47.81 %
Preferred Stock	0.34	0.35	0.39	0.44	0.49	0.40
Common Equity	50.34	49.06	52.67	51.80	55.09	51.79
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Middlesex Water Company						
Long-Term Debt	43.91 %	47.35 %	49.10 %	49.48 %	48.78 %	47.72 %
Preferred Stock	1.07	1.24	1.22	1.46	2.95	1.59
Common Equity	55.02	51.41	49.68	49.06	48.27	50.69
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
SJW Corporation						
Long-Term Debt	53.79 %	49.52 %	48.10 %	48.36 %	44.05 %	48.76 %
Preferred Stock	0.00	0.00	0.00	0.01	0.01	0.00
Common Equity	46.21	50.48	51.90	51.63	55.94	51.24
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
York Water Company						
Long-Term Debt	48.28 %	47.16 %	55.31 %	51.17 %	48.82 %	50.15 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	51.72	52.84	44.69	48.83	51.18	49.85
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Proxy Group of Eight Water Companies						
Long-Term Debt	50.74 %	50.39 %	49.44 %	49.20 %	47.10 %	49.37 %
Preferred Stock	0.21	0.24	0.25	0.35	0.58	0.33
Common Equity	49.05	49.37	50.31	50.46	52.31	50.30
Total Capital	100.00 %	100.00 %	100.00 %	100.01 %	99.99 %	100.00 %

Source of Information
EDGAR Online's I-Metrix Database
Annual Forms 10-K

United Water Rhode Island, Inc.
Indicated Common Equity Cost Rate Through Use of the
Single Stage Discounted Cash Flow Model for
the Proxy Group of Eight Water Companies

Based upon Projected Growth in EPS

	1	2	3	4	5
	Average Dividend Yield (1)	Dividend Growth Component (2)	Adjusted Dividend Yield (3)	Growth Rate (4)	Indicated Common Equity Cost Rate (5)
Proxy Group of Eight Water Companies					
American States Water Co.	3.06 %	0.11 %	3.17 %	7.13 %	10.30 %
American Water Works Co., Inc.	3.28	0.17	3.45	10.47	13.92
Aqua America, Inc.	2.71	0.09	2.80	6.99	9.79
California Water Service Group	3.40	0.11	3.51	6.31	9.82
Connecticut Water Service, Inc.	3.70	0.08	3.78	4.17	7.95
Middlesex Water Company	4.03	0.06	4.09	3.00	7.09
SJW Corporation	2.86	0.20	3.06	14.00	17.06
York Water Company	3.13	0.09	3.22	6.00	9.22
Average					10.64 %
Median					9.81 %

Notes: (1) Indicated dividend at 4/4/2011 divided by the average closing price of the last 60 trading days ending 4/1/2011 for each company.

(2) This reflects a growth rate component equal to one-half the conclusion of growth rate (from page 2 of this Schedule) x Column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for American States Water Co. , 3.06% x (1/2 x 7.13%) = 0.11%.

(3) Column 1 + Column 2

(4) From page 2 of this Schedule.

(5) Column 3 + Column 4

United Water Rhode Island, Inc.
Projected Growth

	1	2		3	4	
	Value Line Projected Five Year Growth in EPS	Reuters Mean Consensus Projected Five Year Growth Rate in EPS	No. of Est.	Zack's Five Year Projected Growth Rate in EPS	Yahoo! Finance Projected Five Year Growth in EPS	Average Projected Five Year Growth Rate in EPS (2)
Proxy Group of Eight Water Companies						
American States Water Co.	9.00 %	6.00 %	[2]	7.50 %	6.00 %	7.13 %
American Water Works Co., Inc.	NMF	11.24	[8]	8.50	11.68	10.47
Aqua America, Inc.	7.50	7.20	[5]	6.50	6.75	6.99
California Water Service Group	7.00	6.00	[3]	4.00	8.25	6.31
Connecticut Water Service, Inc.	NA	5.50	[2]	4.00	3.00	4.17
Middlesex Water Company	NA	(1.00)	[2]	3.00	3.00	3.00 (3)
SJW Corporation	NA	NA		NA	14.00	14.00
York Water Company	NA	6.00	[2]	6.00	6.00	6.00
Average						7.26 %
Median						6.65 %

NA= Not Available
NMF= Not Meaningful Figure

(1) As shown on pages 3 through 10 of this Schedule.
(2) Average of Columns 1 through 4.

(3) Excluding negative growth rates.

Source of Information: Value Line Investment Survey:
www.reuters.com Downloaded on 4/4/11
www.zacks.com Downloaded on 4/4/11
www.yahoo.com Downloaded on 4/4/11

AMER. STATES WATER NYSE-AWR

RECENT PRICE 34.90 | P/E RATIO 13.4 (Trailing: 20.3 Median: 22.0) | RELATIVE P/E RATIO 0.80 | DIV'D YLD 3.0% | VALUE LINE

TIMELINESS 3 Raised 11/19/10
SAFETY 3 New 2/4/00
TECHNICAL 3 Lowered 1/7/11
BETA .80 (1.00 = Market)

2013-15 PROJECTIONS

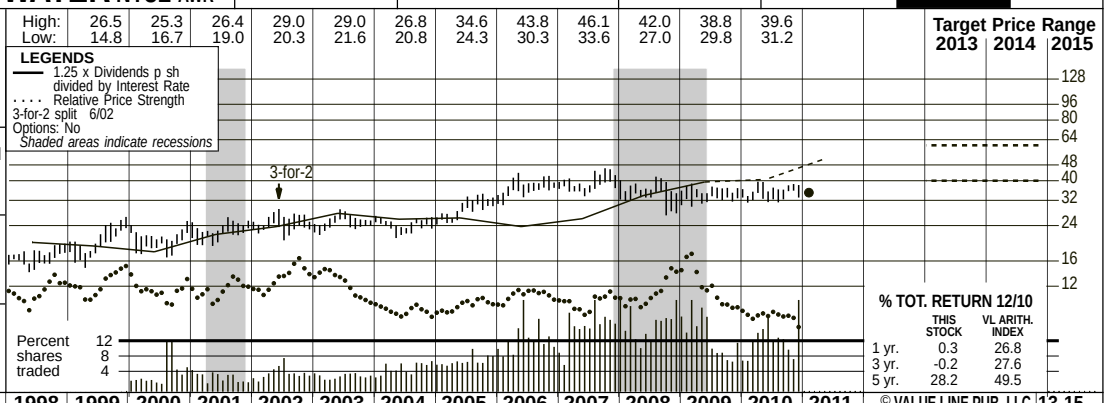
	Price	Gain	Ann'l Total Return
High	60	(+70%)	17%
Low	40	(+15%)	6%

Insider Decisions

	F	M	A	M	J	J	A	S	O
to Buy	0	0	0	0	0	0	2	0	0
Options	0	0	1	1	0	0	0	0	1
to Sell	0	0	1	1	0	0	0	1	1

Institutional Decisions

	1Q2010	2Q2010	3Q2010
to Buy	37	46	53
to Sell	55	55	47
Hld's(000)	8867	10863	11195



Target Price Range 2013 2014 2015
128 96 80 64 48 40 32 24 16 12

% TOT. RETURN 12/10

	THIS STOCK	VL ARITH. INDEX
1 yr.	0.3	26.8
3 yr.	-0.2	27.6
5 yr.	28.2	49.5

1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	© VALUE LINE PUB. LLC	13-15
10.43	11.03	11.37	11.44	11.02	12.91	12.17	13.06	13.78	13.98	13.61	14.06	15.76	17.49	18.42	19.48	*22.50*	*22.90*	Revenues per sh	*25.00*
1.68	1.75	1.75	1.85	2.04	2.26	2.20	2.53	2.54	2.08	2.23	2.64	2.89	3.31	3.37	3.40	*4.20*	*4.35*	"Cash Flow" per sh	*4.85*
.95	1.03	1.13	1.04	1.08	1.19	1.28	1.35	1.34	.78	1.05	1.32	1.33	1.62	1.55	1.62	*2.33*	*2.45*	Earnings per sh A	*2.70*
.80	.81	.82	.83	.84	.85	.86	.87	.87	.88	.89	.90	.91	.96	1.00	1.01	1.04	*1.08*	Div'd Decl'd per sh B■	*1.24*
2.43	2.19	2.40	2.58	3.11	4.30	3.03	3.18	2.68	3.76	5.03	4.24	3.91	2.89	4.45	4.18	*4.05*	*4.20*	Cap'l Spending per sh	*4.75*
10.07	10.29	11.01	11.24	11.48	11.82	12.74	13.22	14.05	13.97	15.01	15.72	16.64	17.53	17.95	19.39	*20.55*	*21.30*	Book Value per sh	*22.50*
11.77	11.77	13.33	13.44	13.44	13.44	15.12	15.12	15.18	15.21	16.75	16.80	17.05	17.23	17.30	18.53	*18.75*	*19.00*	Common Shs Outst'g C	*20.00*
12.8	11.6	12.6	14.5	15.5	17.1	15.9	16.7	18.3	31.9	23.2	21.9	27.7	24.0	22.6	21.2	*15.0*		Avg Ann'l P/E Ratio	*19.0*
.84	.78	.79	.84	.81	.97	1.03	.86	1.00	1.82	1.23	1.17	1.50	1.27	1.36	1.42	*.94*		Relative P/E Ratio	*1.25*
6.6%	6.7%	5.8%	5.5%	5.0%	4.2%	4.2%	3.9%	3.6%	3.5%	3.6%	3.1%	2.5%	2.5%	2.9%	2.9%	3.0%		Avg Ann'l Div'd Yield	*2.5%*
184.0	197.5	209.2	212.7	228.0	236.2	268.6	301.4	318.7	361.0	*422*	*435*	Revenues ($mill)	*500*
18.0	20.4	20.3	11.9	16.5	22.5	23.1	28.0	26.8	29.5	*44.0*	*47.0*	Net Profit ($mill)	*55.0*
45.7%	43.0%	38.9%	43.5%	37.4%	47.0%	40.5%	42.6%	37.8%	38.9%	*42.0%*	*40.0%*	Income Tax Rate	*39.0%*
--	--	--	--	--	--	12.2%	8.5%	6.9%	3.2%	*5.0%*	*5.0%*	AFUDC % to Net Profit	*5.0%*
47.5%	54.9%	52.0%	52.0%	47.7%	50.4%	48.6%	46.9%	46.2%	45.9%	*47.0%*	*46.0%*	Long-Term Debt Ratio	*45.5%*
51.9%	44.7%	48.0%	48.0%	52.3%	49.6%	51.4%	53.1%	53.8%	54.1%	*53.0%*	*54.0%*	Common Equity Ratio	*54.5%*
371.1	447.6	444.4	442.3	480.4	532.5	551.6	569.4	577.0	665.0	*720*	*750*	Total Capital ($mill)	*825*
509.1	539.8	563.3	602.3	664.2	713.2	750.6	776.4	825.3	866.4	*905*	*960*	Net Plant ($mill)	*1150*
6.4%	6.1%	6.5%	4.6%	5.2%	5.4%	6.0%	6.7%	6.4%	5.9%	*7.5%*	*7.5%*	Return on Total Cap'l	*8.0%*
9.2%	10.1%	9.5%	5.6%	6.6%	8.5%	8.1%	9.3%	8.6%	8.2%	*11.5%*	*11.5%*	Return on Shr. Equity	*12.0%*
9.3%	10.1%	9.5%	5.6%	6.6%	8.5%	8.1%	9.3%	8.6%	8.2%	*11.5%*	*11.5%*	Return on Com Equity	*12.0%*
3.0%	3.6%	3.3%	NMF	1.0%	2.8%	2.7%	3.9%	3.1%	3.2%	*6.5%*	*6.5%*	Retained to Com Eq	*6.5%*
68%	65%	65%	113%	84%	67%	67%	58%	64%	61%	*44%*	*44%*	All Div'ds to Net Prof	*45%*

CAPITAL STRUCTURE as of 9/30/10
Total Debt $357.5 mill. **Due in 5 Yrs** $64.0 mill.
LT Debt $299.9 mill. **LT Interest** $22.0 mill.
(LT interest earned: 6.1x: total interest coverage: 5.1x) (45% of Cap'l)

Leases, Uncapitalized: Annual rentals $3.2 mill.

Pension Assets-12/09 $74.0 mill.
Oblig. $103.1 mill.

Pfd Stock None.

Common Stock 18,620,355 shs.
as of 11/3/10
MARKET CAP: $650 million (Small Cap)

CURRENT POSITION ($MILL.)	2008	2009	9/30/10
Cash Assets	7.3	1.7	7.7
Other	83.3	94.3	189.0
Current Assets	90.6	96.0	196.7
Accts Payable	36.6	33.9	43.4
Debt Due	75.3	18.1	57.6
Other	25.5	47.7	88.4
Current Liab.	137.4	99.7	189.4
Fix. Chg. Cov.	293%	352%	*400%*

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '07-'09 to '13-'15
Revenues	4.5%	6.0%	*5.0%*
"Cash Flow"	5.0%	8.0%	*6.5%*
Earnings	4.0%	8.5%	*9.0%*
Dividends	1.5%	2.5%	*4.0%*
Book Value	4.5%	5.0%	*3.5%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2007	72.3	79.3	75.8	74.0	301.4
2008	68.9	80.3	85.3	84.2	318.7
2009	79.6	93.6	101.5	86.3	361.0
2010	90.3	95.5	111.3	*124.9*	*422*
2011	*100*	*105*	*120*	*110*	*435*

Calendar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2007	.40	.42	.44	.35	1.62
2008	.30	.53	.26	.43	1.55
2009	.28	.64	.52	.18	1.62
2010	.45	.47	.62	*.79*	*2.33*
2011	*.54*	*.65*	*.68*	*.58*	*2.45*

Calendar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2007	.235	.235	.235	.250	.96
2008	.250	.250	.250	.250	1.00
2009	.250	.250	.250	.260	1.01
2010	.260	.260	.260	.260	1.04
2011					

BUSINESS: American States Water Co. operates as a holding company. Through its principal subsidiary, Golden State Water Company, it supplies water to more than 250,000 customers in 75 communities in 10 counties. Service areas include the greater metropolitan areas of Los Angeles and Orange Counties. The company also provides electric utility services to nearly 23,250 customers in the city of Big Bear Lake and in areas of San Bernardino County. Acquired Chaparral City Water of Arizona (10/00). Has 703 employees. Officers & directors own 2.6% of common stock (4/10 Proxy). Chairman: Lloyd Ross. President & CEO: Robert J. Sprowls. Inc: CA. Addr: 630 East Foothill Boulevard, San Dimas, CA 91773. Tel: 909-394-3600. Internet: www.aswater.com.

American States Water bounced back nicely in the third quarter. The water utility reported earnings of $0.62 a share, 19% better than the year before and well ahead of expectations. (We have excluded $0.27 a share in charges related to the writedown of assets at subsidiary Golden Golden State Water Company that we deem as one-time in nature and thus nonrecurring.) Although operating expenses continued to mount, the top line improved 12%, to $111.3 million, thanks to strength in water, electric, and construction services revenues, with growth of the latter two businesses topping 20%.

A recent regulatory ruling will likely make for favorable comparisons going forward. The California Public Utilities Commission's long-awaited rate-case ruling was handed down prior to the end of 2010, approving rate increases for Region II and III retroactive to January 1st of last year. Revenue increases for 2010 total roughly $32 million. Approximately $10.3 million, or $0.33 per share, will be recorded in the fourth quarter and a surcharge will be implemented to recover the retroactive revenues over a two-year window. December-period results were likely particularly strong versus a weak comparison.

The picture is not as rosy, longer-term, however. Operating costs have continued to rise and are not likely to slow anytime soon, given the necessary repairs that many of the country's watersystems and pipelines require. American will need to make heavy investment in its infrastructure, but does not have sufficient cash on hand to foot the bill. It will have to continue seeking outside financing, which will result in either a higher interest expense or greater share count. Offerings of either variety will temper gains. The company recently priced $100 million in first mortgage bonds in order to pay off short-term debt and finance day-to-day operations, specifically capital projects.

We advise investors to look elsewhere. The stock does not stand out as a growth candidate for either the coming six to 12 months or the next 3- to 5-years, based on the capital requirements we envision. Meanwhile, the dividend, while attractive at first blush, comes up short versus many other utility stocks included in our *Survey.*

Andre J. Costanza *January 21, 2011*

(A) Primary earnings. Excludes nonrecurring gains/(losses): '04, 14¢; '05, 25¢; '06, 6¢; '08, (27¢); '10, (27¢). Next earnings report due early March. Quarterly egs. may not add due to rounding.
(B) Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.
(C) In millions, adjusted for split.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	70
Earnings Predictability	85

AMERICAN WATER NYSE-AWK

RECENT PRICE **25.36** | P/E RATIO **15.7** (Trailing: 16.7 Median: NMF) | RELATIVE P/E RATIO **0.94** | DIV'D YLD **3.5%** | **VALUE LINE**

TIMELINESS **1** New 10/22/10
SAFETY **3** New 7/25/08
TECHNICAL **3** Lowered 12/10/10
BETA .65 (1.00 = Market)

2013-15 PROJECTIONS

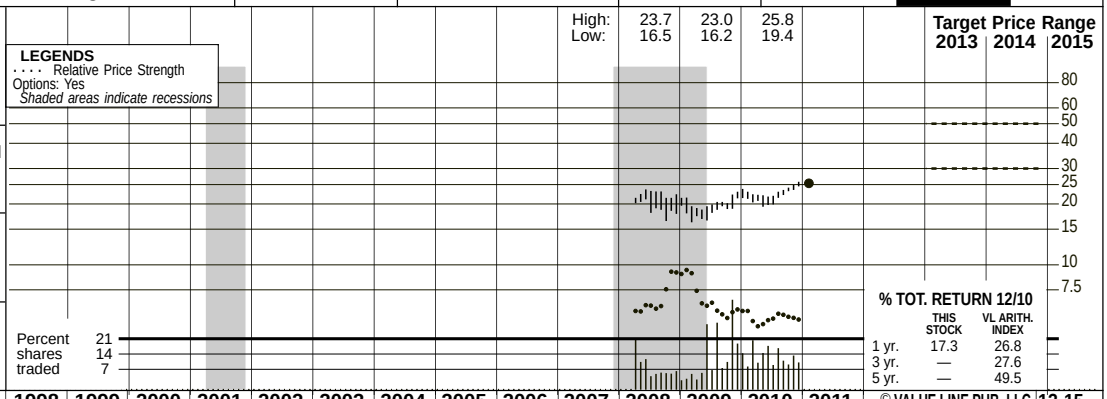
	Price	Gain	Ann'l Total Return
High	50	(+95%)	*21%*
Low	30	(+20%)	*7%*

Insider Decisions

	F	M	A	M	J	J	A	S	O
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	1Q2010	2Q2010	3Q2010
to Buy	144	134	146
to Sell	102	107	93
Hld's(000)	151936	154379	149349



1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	© VALUE LINE PUB. LLC	13-15
--	--	--	--	--	--	--	--	--	--	--	--	13.08	13.84	14.61	13.98	***15.50***	***16.10***	Revenues per sh	***17.20***
--	--	--	--	--	--	--	--	--	--	--	--	.65	d.47	2.87	2.89	***3.35***	***3.50***	"Cash Flow" per sh	***3.85***
--	--	--	--	--	--	--	--	--	--	--	--	d.97	d2.14	1.10	1.25	***1.57***	***1.70***	Earnings per sh [A]	***2.00***
--	--	--	--	--	--	--	--	--	--	--	--	--	--	.40	.82	.86	***.90***	Div'd Decl'd per sh [B]	***1.00***
--	--	--	--	--	--	--	--	--	--	--	--	4.31	4.74	6.31	4.50	***4.00***	***4.10***	Cap'l Spending per sh	***4.35***
--	--	--	--	--	--	--	--	--	--	--	--	23.86	28.39	25.64	22.91	***23.60***	***23.60***	Book Value per sh [D]	***24.35***
--	--	--	--	--	--	--	--	--	--	--	--	160.00	160.00	160.00	174.63	***176.00***	***180.00***	Common Shs Outst'g [C]	***195.00***
--	--	--	--	--	--	--	--	--	--	--	--	--	--	18.9	15.6	***14.2***		Avg Ann'l P/E Ratio	***20.0***
--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.14	1.04	***.90***		Relative P/E Ratio	***1.35***
--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.9%	4.2%	3.8%		Avg Ann'l Div'd Yield	***2.5%***
												2093.1	2214.2	2336.9	2440.7	***2725***	***2900***	Revenues ($mill)	***3350***
												d155.8	d342.3	187.2	209.9	***275***	***300***	Net Profit ($mill)	***380***
												--	--	37.4%	37.9%	***39.0%***	***39.0%***	Income Tax Rate	***38.0%***
												--	--	12.5%	10.0%	***10.0%***	***10.0%***	AFUDC % to Net Profit	***15.0%***
												56.1%	50.9%	53.1%	56.9%	***56.5%***	***57.5%***	Long-Term Debt Ratio	***56.0%***
												43.9%	49.1%	46.9%	43.1%	***43.5%***	***42.5%***	Common Equity Ratio	***45.0%***
												8692.8	9245.7	8750.2	9289.0	***9600***	***9900***	Total Capital ($mill)	***10550***
												8720.6	9318.0	9991.8	10524	***10900***	***11350***	Net Plant ($mill)	***12700***
												NMF	NMF	3.7%	3.8%	***4.5%***	***4.5%***	Return on Total Cap'l	***5.0%***
												NMF	NMF	4.6%	5.2%	***6.5%***	***7.0%***	Return on Shr. Equity	***8.0%***
												NMF	NMF	4.6%	5.2%	***6.5%***	***7.0%***	Return on Com Equity	***8.0%***
												NMF	NMF	3.0%	1.8%	***2.5%***	***3.5%***	Retained to Com Eq	***4.0%***
												--	--	34%	65%	***55%***	***54%***	All Div'ds to Net Prof	***51%***

CAPITAL STRUCTURE as of 9/30/10
Total Debt $5621.2 mill. **Due in 5 Yrs** $405.0 mill.
LT Debt $5395.4 mill. **LT Interest** $300.0 mill.
(Total interest coverage: 3.7x) (57% of Cap'l)

Leases, Uncapitalized: Annual rentals $29.0 mill.
Pension Assets-12/09 $695.5 mill
Oblig. $1128.2 mill.
Pfd Stock $23.8 mill. **Pfd Div'd** NMF

Common Stock 174,873,174 shs.
as of 10/29/10

MARKET CAP: $4.4 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2008	2009	9/30/10
Cash Assets	9.5	22.3	23.5
Other	408.2	476.8	603.9
Current Assets	417.7	499.1	627.4
Accts Payable	149.8	138.6	166.4
Debt Due	654.8	173.6	225.8
Other	300.2	295.2	349.2
Current Liab.	1104.8	607.4	741.4
Fix. Chg. Cov.	198%	225%	*350%*

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '07-'09 to '13-'15
Revenues	--	--	*3.5%*
"Cash Flow"	--	--	*14.0%*
Earnings	--	--	*NMF*
Dividends	--	--	*16.0%*
Book Value	--	--	*-1.0%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2007	468.6	558.7	633.1	553.8	2214.2
2008	506.8	589.4	672.2	568.5	2336.9
2009	550.2	612.7	680.0	597.8	2440.7
2010	588.1	671.2	786.9	***678.8***	***2725***
2011	***620***	***720***	***825***	***735***	***2900***

Calendar	EARNINGS PER SHARE [A] Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2007	.02	.31	d1.00	d1.47	d2.14
2008	.04	.28	.55	.23	1.10
2009	.19	.32	.52	.21	1.25
2010	.18	.42	.71	***.26***	***1.57***
2011	***.20***	***.45***	***.75***	***.30***	***1.70***

Calendar	QUARTERLY DIVIDENDS PAID [B]■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2007	--	--	--	--	--
2008	--	--	.20	.20	.40
2009	.20	.20	.21	.21	.82
2010	.21	.21	.22	.22	.86
2011					

BUSINESS: American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to over 15 million people in 32 states and Canada. Its non-regulated business assists municipalities and military bases with the maintenance and upkeep as well. Regulated operations made more than 90% of 2009 revenues. New Jersey is its biggest market accounting for nearly 23% of revenues. Has roughly 7,700 employees. Depreciation rate, 2.2% in '09. J.P. Morgan Chase & Co. owns 5.9% of the common stock outstanding. Off. & dir. own less than 1%. President & CEO; Jeffrey Sterba. Chairman; George Mackenzie Jr. Address: 1025 Laurel Oak Road, Voorhees, NJ 08043. Telephone: 856-346-8200. Internet: www.amwater.com.

American Water Works continues to exceed our expectations. The nation's largest water utility blew away our third-quarter estimates, reporting share earnings of $0.71, on 17% revenue growth. We were looking for advances in the 10% to 12% neighborhood. Regulated business improved 15%, thanks to higher water usage and favorable regulatory awards. Sales from non-regulated operations increased 23%, owed to success from contract operations, namely industrial and military. The gross margin, meanwhile, improved nearly 300 basis points, despite 10% higher operating and maintenance costs.

We believe that the company easily exceeded 2010 full-year guidance. Management left its 2010 earnings outlook untouched at $1.42 to $1.52 a share, indicating minimal growth in the December period at best. Although it did say that it expects to come in at the higher end, even that is conservative in our eyes, given the aforementioned margin trends. Plus, we've continued to pare our financing expectations, based on the recent cash flow generation. This all suggests that American was able to post close to 20% earnings growth in the fourth quarter.

Growth will likely slow, but ought to remain healthy against more difficult comparisons in 2011. We've upped our share earnings estimate for this year by 8%, to $1.70 to account for a tamer-than-originally expected interest expense, lower share count, and larger customer base. American continues to expand its footprint via its acquisition-friendly ways.

The stock is on our recommended list. It garners our Highest (1) rank for Timeliness based on its recent share-price momentum and our healthy six to 12 months earnings forecast. We've raised our 2013-2015 Target Price Range to account for less financing and the stock thus holds worthwhile 3- to 5-year appreciation potential. When you factor in the dividend, AWK looks to be an appealing total-return vehicle with limited downside. Its Price Stability score is high (85) and the beta coefficient is well below the 1.00 market average. Although new CEO and President Jeff Sterba has only been at the helm since August, he looks to have a good grasp on how to improve operations.

Andre J. Costanza *January 21, 2011*

(A) Diluted earnings. Excludes nonrecurring gains (losses): '08, ($4.62); '09, ($2.63). Discontinued operations: '06, (4¢).
Next earnings report due mid-Feb. Quarterly earnings may not sum due to rounding.
(B) Dividends to be paid in January, April, July, and October. ■ Div. reinvestment available.
(C) In millions.
(D) Includes intangibles. In 2009: $1.250 billion, $7.16/share.

Company's Financial Strength	B
Stock's Price Stability	85
Price Growth Persistence	NMF
Earnings Predictability	NMF

AQUA AMERICA NYSE-WTR

RECENT PRICE **22.96** | P/E RATIO **25.0** (Trailing: 26.4 Median: 25.0) | RELATIVE P/E RATIO **1.50** | DIV'D YLD **2.7%** | **VALUE LINE**

TIMELINESS **3** Lowered 1/21/11
SAFETY **3** Lowered 8/1/03
TECHNICAL **3** Lowered 8/13/10
BETA .65 (1.00 = Market)

2013-15 PROJECTIONS

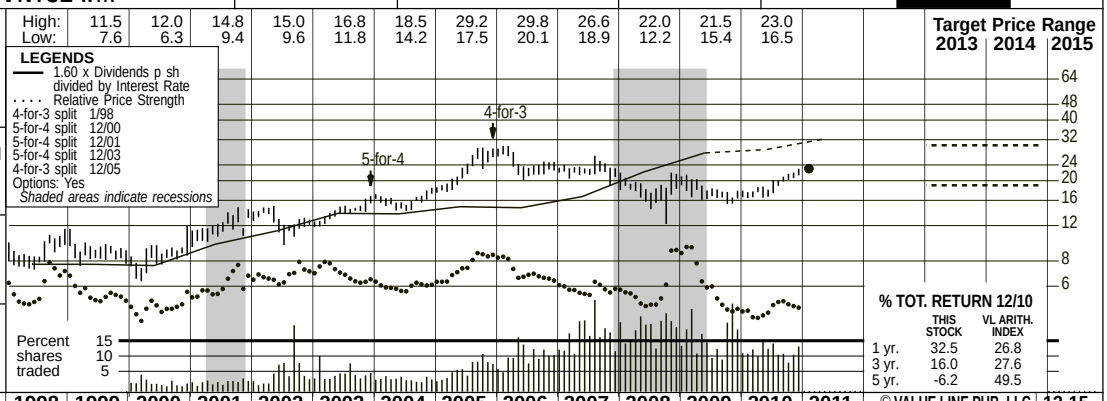
	Price	Gain	Ann'l Total Return
High	30	(+30%)	9%
Low	19	(-15%)	-1%

Insider Decisions

	F	M	A	M	J	J	A	S	O
to Buy	0	1	0	1	0	0	0	1	0
Options	1	0	1	0	0	0	0	2	1
to Sell	0	0	1	0	0	3	0	2	1

Institutional Decisions

	1Q2010	2Q2010	3Q2010
to Buy	106	92	90
to Sell	106	119	101
Hld's(000)	57767	60654	59791



Target Price Range

2013	2014	2015

% TOT. RETURN 12/10

	THIS STOCK	VL ARITH. INDEX
1 yr.	32.5	26.8
3 yr.	16.0	27.6
5 yr.	-6.2	49.5

1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	© VALUE LINE PUB. LLC	13-15
1.82	1.84	1.86	2.02	2.09	2.41	2.46	2.70	2.85	2.97	3.48	3.85	4.03	4.52	4.63	4.91	***5.30***	***5.60***	Revenues per sh	***6.60***
.42	.47	.50	.56	.61	.72	.76	.86	.94	.96	1.09	1.21	1.26	1.37	1.42	1.61	***1.75***	***1.85***	"Cash Flow" per sh	***2.15***
.26	.29	.30	.34	.40	.42	.47	.51	.54	.57	.64	.71	.70	.71	.73	.77	***.90***	***.97***	Earnings per sh [A]	***1.15***
.21	.22	.23	.24	.26	.27	.28	.30	.32	.35	.37	.40	.44	.48	.51	.55	.59	***.63***	Div'd Decl'd per sh [B]■	***.75***
.46	.52	.48	.58	.82	.90	1.16	1.09	1.20	1.32	1.54	1.84	2.05	1.79	1.98	2.08	***2.20***	***1.45***	Cap'l Spending per sh	***1.60***
2.41	2.46	2.69	2.84	3.21	3.42	3.85	4.15	4.36	5.34	5.89	6.30	6.96	7.32	7.82	8.12	***8.35***	***8.70***	Book Value per sh	***9.75***
59.77	63.74	65.75	67.47	72.20	106.80	111.82	113.97	113.19	123.45	127.18	128.97	132.33	133.40	135.37	136.49	***137.60***	***138.10***	Common Shs Outst'g [C]	***139.60***
13.5	12.0	15.6	17.8	22.5	21.2	18.2	23.6	23.6	24.5	25.1	31.8	34.7	32.0	24.9	23.1	***24.9***		Avg Ann'l P/E Ratio	***21.0***
.89	.80	.98	1.03	1.17	1.21	1.18	1.21	1.29	1.40	1.33	1.69	1.87	1.70	1.50	1.54	***1.50***		Relative P/E Ratio	***1.40***
6.0%	6.2%	4.9%	3.9%	2.9%	3.0%	3.3%	2.5%	2.5%	2.5%	2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	2.7%		Avg Ann'l Div'd Yield	***2.5%***
275.5	307.3	322.0	367.2	442.0	496.8	533.5	602.5	627.0	670.5	***730***	***770***	Revenues ($mill)	***920***
50.7	58.5	62.7	67.3	80.0	91.2	92.0	95.0	97.9	104.4	***125***	***135***	Net Profit ($mill)	***160***
38.9%	39.3%	38.5%	39.3%	39.4%	38.4%	39.6%	38.9%	39.7%	39.4%	***40.0%***	***40.0%***	Income Tax Rate	***40.0%***
--	--	--	--	--	--	--	--	2.9%	3.1%	***2.5%***	***2.5%***	AFUDC % to Net Profit	***1.5%***
52.0%	52.2%	54.2%	51.4%	50.0%	52.0%	51.6%	55.4%	54.1%	55.6%	***56.0%***	***56.0%***	Long-Term Debt Ratio	***58.0%***
47.8%	47.7%	45.8%	48.6%	50.0%	48.0%	48.4%	44.6%	45.9%	44.4%	***44.0%***	***44.0%***	Common Equity Ratio	***42.0%***
901.1	990.4	1076.2	1355.7	1497.3	1690.4	1904.4	2191.4	2306.6	2495.5	***2600***	***2750***	Total Capital ($mill)	***3200***
1251.4	1368.1	1490.8	1824.3	2069.8	2280.0	2506.0	2792.8	2997.4	3227.3	***3380***	***3480***	Net Plant ($mill)	***3750***
7.4%	7.8%	7.6%	6.4%	6.7%	6.9%	6.4%	5.9%	5.7%	5.6%	***5.0%***	***5.0%***	Return on Total Cap'l	***5.0%***
11.7%	12.3%	12.7%	10.2%	10.7%	11.2%	10.0%	9.7%	9.3%	9.4%	***11.0%***	***11.0%***	Return on Shr. Equity	***12.0%***
11.7%	12.4%	12.7%	10.2%	10.7%	11.2%	10.0%	9.7%	9.3%	9.4%	***11.0%***	***11.0%***	Return on Com Equity	***12.0%***
4.7%	5.1%	5.2%	4.2%	4.6%	4.9%	3.7%	3.2%	2.8%	2.7%	***4.0%***	***4.0%***	Retained to Com Eq	***4.0%***
60%	59%	59%	59%	57%	56%	63%	67%	70%	72%	***65%***	***64%***	All Div'ds to Net Prof	***66%***

CAPITAL STRUCTURE as of 9/30/10
Total Debt $1463.1 mill. **Due in 5 Yrs** $275 mill.
LT Debt $1450.3 mill. **LT Interest** $60.0 mill.
(LT interest earned: 4.0x; total interest coverage: 4.0x) (56% of Cap'l)

Pension Assets-12/09 $135.6 mill. **Oblig.** $217.8 mill.

Pfd Stock None
Common Stock 137,540,249 shares
as of 10/26/10

MARKET CAP: $3.2 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2008	2009	9/30/10
Cash Assets	14.9	21.9	13.6
Receivables	84.5	78.7	96.5
Inventory (AvgCst)	9.8	9.5	10.0
Other	11.8	11.5	29.1
Current Assets	121.0	121.6	149.2
Accts Payable	50.0	57.9	36.5
Debt Due	87.9	87.0	12.8
Other	55.3	56.1	157.3
Current Liab.	193.2	201.0	206.6
Fix. Chg. Cov.	329%	346%	325%

ANNUAL RATES (of change (per sh))	Past 10 Yrs.	Past 5 Yrs.	Est'd '07-'09 to '13-'15
Revenues	8.0%	8.5%	*6.0%*
"Cash Flow"	9.0%	8.0%	*6.5%*
Earnings	6.5%	5.0%	*7.5%*
Dividends	7.5%	8.0%	*6.5%*
Book Value	9.5%	8.5%	*4.0%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2007	137.3	150.6	165.5	149.1	602.5
2008	139.3	151.0	177.1	159.6	627.0
2009	154.5	167.3	180.8	167.9	670.5
2010	160.5	178.4	207.8	***183.3***	***730***
2011	***180***	***185***	***210***	***195***	***770***

Calendar	EARNINGS PER SHARE [A] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2007	.13	.17	.22	.19	.71
2008	.11	.17	.26	.19	.73
2009	.14	.19	.25	.20	.77
2010	.16	.22	.32	***.20***	***.90***
2011	***.17***	***.23***	***.34***	***.23***	***.97***

Calendar	QUARTERLY DIVIDENDS PAID [B] ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2007	.115	.115	.125	.125	.48
2008	.125	.125	.125	.135	.51
2009	.135	.135	.135	.145	.55
2010	.145	.145	.145	.155	.59
2011					

BUSINESS: Aqua America, Inc. is the holding company for water and wastewater utilities that serve approximately three million residents in Pennsylvania, Ohio, North Carolina, Illinois, Texas, New Jersey, Florida, Indiana, and five other states. Divested three of four non-water businesses in '91; telemarketing group in '93; and others. Acquired AquaSource, 7/03; Consumers Water, 4/99; and others. Water supply revenues '09: residential, 58.5%; commercial, 14%; industrial & other, 27.5%. Officers and directors own 1.5% of the common stock (4/10 Proxy). Chairman & Chief Executive Officer: Nicholas DeBenedictis. Incorporated: Pennsylvania. Address: 762 West Lancaster Avenue, Bryn Mawr, Pennsylvania 19010. Telephone: 610-525-1400. Internet: www.aquaamerica.com.

We have raised our near-term estimates for Aqua America. Hot and dry weather in the east provided a considerable boost to earnings in the third quarter. As a result, 2010 share net likely rose more than 15% compared to a year ago. As the company continues expanding its customer base, profits should remain on the upswing in 2011 and beyond.

Acquisitions are driving much of the revenue growth. Indeed, 14 purchases were made in the third quarter alone, bringing the full year total to 26. Aqua America's Texas subsidiary also bought the assets of Gray Utility. This acquisition is slated to bring about 6,000 new customers into the fold in 2011. Looking ahead, it is likely that the company will make a play for all or part of Acquarion, a Connecticut-based water utility with considerable connections. Finally, given the fragmented nature of the industry and the lack of major players, we believe that Aqua America will continue expanding aggressively in the years to come. This should bolster the top and bottom lines over the 3 to 5 year pull.

Favorable rate rulings are contributing, as well. Thus far, the company has received rate hikes in various states, including North Carolina, New York, Ohio, Indiana, and Maine. There are several other rate cases pending, the results of which should be ruled on in the first quarter of 2011. The decisions are likely to positively impact revenue and profit streams this year and the next.

Aqua America's future looks bright. The company is well positioned to continue growing via acquisitions. Indeed, Aqua is well capitalized, and management anticipates further expansions in 2011 and beyond. Finally, unlike many of its competitors, the company is also diversifying its holdings. Aqua has invested in solar power and we expect it to become a solid presence in this market in the future.

Income investors should find this issue of interest. Aqua has a long history of steady dividend increases, and we anticipate this trend will continue. However, the current price seems to discount most of our projected Total Return potential. Finally, the stock is ranked to trade in line with the market for the year ahead.

Sahana Zutshi *January 21, 2011*

(A) Diluted shares. Excl. nonrec. gains (losses): '99, (11¢); '00, 2¢; '01, 2¢; '02, 5¢; '03, 4¢. Excl. gain from disc. operations: '96, 2¢. Earnings may not add due to rounding.

Next earnings report due early February.
(B) Dividends historically paid in early March, June, Sept. & Dec. ■ Div'd. reinvestment plan available (5% discount).

(C) In millions, adjusted for stock splits.

Company's Financial Strength	B+
Stock's Price Stability	100
Price Growth Persistence	65
Earnings Predictability	100

CALIFORNIA WATER NYSE-CWT

RECENT PRICE 37.25 | P/E RATIO 18.3 (Trailing: 19.7 Median: 22.0) | RELATIVE P/E RATIO 1.10 | DIV'D YLD 3.2% | VALUE LINE

TIMELINESS 3 Raised 11/5/10
SAFETY 3 Lowered 7/27/07
TECHNICAL 3 Lowered 11/12/10
BETA .70 (1.00 = Market)

2013-15 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	60	(+60%)	15%
Low	40	(+5%)	5%

Insider Decisions

	F	M	A	M	J	J	A	S	O
to Buy	0	18	0	0	0	0	1	0	0
Options	0	0	0	0	0	0	0	2	0
to Sell	0	0	0	1	0	0	0	0	0

Institutional Decisions

	1Q2010	2Q2010	3Q2010
to Buy	59	43	53
to Sell	56	72	53
Hld's(000)	9894	8640	9706

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	© VALUE LINE PUB. LLC	13-15
High:	32.0	31.4	28.6	26.9	31.4	37.9	42.1	45.8	45.4	46.6	48.3	39.7								
Low:	22.6	21.5	22.9	20.5	23.7	26.1	31.2	32.8	34.2	27.7	33.5	33.8								
	12.59	13.17	14.48	15.48	14.76	15.96	16.16	16.26	17.33	16.37	17.18	17.44	16.20	17.76	19.80	21.64	*22.30*	*23.85*	Revenues per sh	*26.40*
	2.02	2.07	2.50	2.92	2.60	2.75	2.52	2.20	2.65	2.51	2.83	3.03	2.71	3.12	3.72	3.87	*4.10*	*4.30*	"Cash Flow" per sh	*4.85*
	1.22	1.17	1.51	1.83	1.45	1.53	1.31	.94	1.25	1.21	1.46	1.47	1.34	1.50	1.90	1.95	*1.93*	*2.20*	Earnings per sh [A]	*2.65*
	.99	1.02	1.04	1.06	1.07	1.09	1.10	1.12	1.12	1.12	1.13	1.14	1.15	1.16	1.17	1.18	1.19	*1.20*	Div'd Decl'd per sh [B] ■	*1.23*
	2.26	2.17	2.83	2.61	2.74	3.44	2.45	4.09	5.82	4.39	3.73	4.01	4.28	3.68	4.82	5.33	*6.30*	*6.25*	Cap'l Spending per sh	*6.40*
	11.56	11.72	12.22	13.00	13.38	13.43	12.90	12.95	13.12	14.44	15.66	15.79	18.15	18.50	19.44	20.26	*20.95*	*21.80*	Book Value per sh [C]	*24.90*
	12.49	12.54	12.62	12.62	12.62	12.94	15.15	15.18	15.18	16.93	18.37	18.39	20.66	20.67	20.72	20.77	*21.00*	*22.00*	Common Shs Outst'g [D]	*23.50*
	14.1	13.7	11.9	12.6	17.8	17.8	19.6	27.1	19.8	22.1	20.1	24.9	29.2	26.1	19.8	19.7	*19.0*		Avg Ann'l P/E Ratio	*19.0*
	.92	.92	.75	.73	.93	1.01	1.27	1.39	1.08	1.26	1.06	1.33	1.58	1.39	1.19	1.32	*1.20*		Relative P/E Ratio	*1.25*
	5.8%	6.4%	5.8%	4.6%	4.2%	4.0%	4.3%	4.4%	4.5%	4.2%	3.9%	3.1%	2.9%	3.0%	3.1%	3.1%	3.2%		Avg Ann'l Div'd Yield	*2.5%*
	244.8	246.8	263.2	277.1	315.6	320.7	334.7	367.1	410.3	449.4	*468*	*525*	Revenues ($mill) [E]	*620*
	20.0	14.4	19.1	19.4	26.0	27.2	25.6	31.2	39.8	40.6	*40.5*	*48.0*	Net Profit ($mill)	*63.0*
	42.3%	39.4%	39.7%	39.9%	39.6%	42.4%	37.4%	39.9%	37.7%	40.3%	*39.5%*	*39.0%*	Income Tax Rate	*39.0%*
	--	--	--	10.3%	3.2%	3.3%	10.6%	8.3%	8.6%	7.6%	*8.5%*	*10.0%*	AFUDC % to Net Profit	*10.0%*
	48.9%	50.3%	55.3%	50.2%	48.6%	48.3%	43.5%	42.9%	41.6%	47.1%	*50.0%*	*50.0%*	Long-Term Debt Ratio	*50.0%*
	50.2%	48.8%	44.0%	49.1%	50.8%	51.1%	55.9%	56.6%	58.4%	52.9%	*50.0%*	*50.0%*	Common Equity Ratio	*50.0%*
	388.8	402.7	453.1	498.4	565.9	568.1	670.1	674.9	690.4	794.9	*890*	*960*	Total Capital ($mill)	*1170*
	582.0	624.3	697.0	759.5	800.3	862.7	941.5	1010.2	1112.4	1198.1	*1280*	*1350*	Net Plant ($mill)	*1650*
	6.8%	5.3%	5.9%	5.6%	6.1%	6.3%	5.2%	5.9%	7.1%	6.5%	*6.0%*	*6.5%*	Return on Total Cap'l	*6.5%*
	10.0%	7.2%	9.4%	7.8%	8.9%	9.3%	6.8%	8.1%	9.9%	9.6%	*9.0%*	*10.0%*	Return on Shr. Equity	*11.0%*
	10.1%	7.2%	9.5%	7.9%	9.0%	9.3%	6.8%	8.1%	9.9%	9.6%	*9.0%*	*10.0%*	Return on Com Equity	*11.0%*
	1.8%	NMF	1.0%	.7%	2.1%	2.1%	1.0%	1.8%	3.8%	3.8%	*3.5%*	*4.5%*	Retained to Com Eq	*6.0%*
	82%	119%	90%	91%	77%	78%	86%	77%	61%	60%	*62%*	*54%*	All Div'ds to Net Prof	*46%*

CAPITAL STRUCTURE as of 9/30/10
Total Debt $438.9 mill. **Due in 5 Yrs** $126.9 mill.
LT Debt $380.3 mill. **LT Interest** $28.0 mill.

(LT interest earned: 6.4x; total int. cov.: 5.7x)

Pension Assets-12/09 $105.6 mill.
Oblig. $219.7 mill.
Pfd Stock None

Common Stock 20,830,303 shs.
as of 11/2/10

MARKET CAP: $775 million (Small Cap)

CURRENT POSITION ($MILL.)	2008	2009	9/30/10
Cash Assets	13.9	9.9	9.7
Other	65.9	82.3	82.0
Current Assets	79.8	92.2	91.7
Accts Payable	45.1	43.7	48.4
Debt Due	42.8	25.0	58.6
Other	35.3	41.7	48.5
Current Liab.	123.2	110.4	155.5
Fix. Chg. Cov.	398%	430%	*390%*

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '07-'09 to '13-'15
Revenues	2.5%	3.0%	*5.0%*
"Cash Flow"	2.5%	6.0%	*5.0%*
Earnings	1.0%	6.5%	*7.0%*
Dividends	1.0%	1.0%	*1.0%*
Book Value	4.0%	6.0%	*4.0%*

Calendar	QUARTERLY REVENUES ($ mill.) [E] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2007	71.6	95.8	113.8	85.9	367.1
2008	72.9	105.6	131.7	100.1	410.3
2009	86.6	116.7	139.2	106.9	449.4
2010	90.3	118.3	146.3	*113.1*	*468*
2011	*100*	*132*	*165*	*128*	*525*

Calendar	EARNINGS PER SHARE [A] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2007	.07	.37	.67	.39	1.50
2008	.01	.48	1.06	.35	1.90
2009	.12	.58	.94	.31	1.95
2010	.10	.50	.98	*.35*	*1.93*
2011	*.13*	*.58*	*1.08*	*.41*	*2.20*

Calendar	QUARTERLY DIVIDENDS PAID [B] ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2007	.290	.290	.290	.290	1.16
2008	.293	.293	.293	.293	1.17
2009	.295	.295	.295	.295	1.18
2010	.2975	.2975	.2975	.2975	1.19
2011					

BUSINESS: California Water Service Group provides regulated and nonregulated water service to roughly 467,100 customers in 83 communities in California, Washington, New Mexico, and Hawaii. Main service areas: San Francisco Bay area, Sacramento Valley, Salinas Valley, San Joaquin Valley & parts of Los Angeles. Acquired Rio Grande Corp; West Hawaii Utilities (9/08). Revenue breakdown, '09: residential, 70%; business, 19%; public authorities, 5%; industrial, 5%; other, 1%. '09 reported depreciation rate: 2.3%. Has roughly 1,013 employees. Chairman: Robert W. Foy. President & CEO: Peter C. Nelson (4/10 Proxy). Inc.: Delaware. Address: 1720 North First Street, San Jose, California 95112-4598. Telephone: 408-367-8200. Internet: www.calwatergroup.com.

California Water Service Group appears to have gotten a better handle on operating expenses. Fourth-quarter results were not released yet, but the water utility reported 4% share-earnings growth in the September period. Earnings declined in the first half of the year, as operating costs escalated amid greater infrastructure investment. Although rising maintenance costs are par for the course in this capital-intensive industry (see below), management was able to control more-discretionary spending, namely administrative costs, in the third quarter. We suspect that it is keeping a close watch on the cost structure, and that it was probably able to produce a double-digit earnings advance in the fourth quarter.

Growth of 10% to 15% in likely in 2011. The California Public Utilities Commission (CPUC) recently approved a rate increase, adding more than $25 million to annual revenues beginning in January. An additional $8 million is pending on the completion of capital projects. The decision was a bit lighter than the initial $70-plus million request and the $45 million we expected, but should help the company achieve $2.20 in share earnings this year nonetheless.

Still, there are some issues that may plague future growth trends. True, the CPUC has definitely taken on a more business friendly disposition in recent years. And the company is definitely doing a better job keeping costs in check. But we worry that infrastructure costs will not be able to be kept under wraps and that limited finances will be problematic. Indeed, many of the company's water systems require significant attention. Its cash coffers are nearly empty, however, and it will have to continue to rely on outside financing to keep the doors open. The additional debt and/or equity offerings needed will only temper shareholder returns. Therefore, CWT is not an attractive growth vehicle, whether it be for the coming six to 12 months of 3 to 5 years.

This issue's income component is the stock's saving grace, but may not be enough to entice most. CWT is a top-dividend yielding water utility. The payout may come under some pressure, though, given the company's financial restraints.

Andre J. Costanza *January 21, 2011*

(A) Basic EPS. Excl. nonrecurring gain (loss): '00, (7¢); '01, 4¢; '02, 8¢. Next earnings report due early February.

(B) Dividends historically paid in mid-Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available.

(C) Incl. deferred charges. In '09: $2.6 mill., $0.13/sh.
(D) In millions, adjusted for split.
(E) Excludes non-reg. rev.

Company's Financial Strength	B+
Stock's Price Stability	85
Price Growth Persistence	70
Earnings Predictability	85

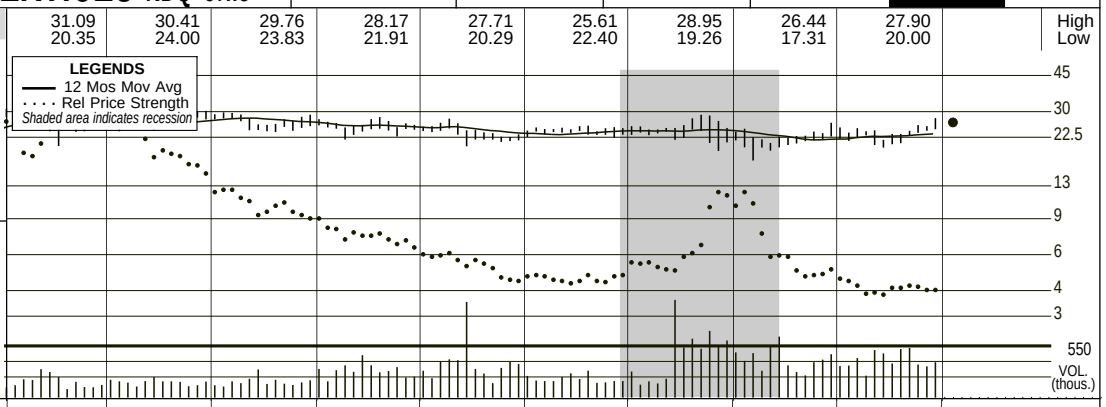
CONN. WATER SERVICES NDQ--CTWS

RECENT PRICE **26.50** | TRAILING P/E RATIO **25.2** | RELATIVE P/E RATIO **1.37** | DIV'D YLD **3.5%** | **VALUE LINE**

RANKS

PERFORMANCE	**3**	*Average*
Technical	**3**	*Average*
SAFETY	**2**	*Above Average*
BETA .80	(1.00 = Market)	

Financial Strength	B+
Price Stability	95
Price Growth Persistence	30
Earnings Predictability	80



© VALUE LINE PUBLISHING LLC	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011/2012
SALES PER SH	5.77	5.91	6.04	5.81	5.68	7.05	7.24	6.93	--	
"CASH FLOW" PER SH	1.78	1.89	1.91	1.62	1.52	1.90	1.95	1.93	--	
EARNINGS PER SH	1.12	1.15	1.16	.88	.81	1.05	1.11	1.19	***1.20*** [A,B]	***1.19*** [C]***/NA***
DIV'DS DECL'D PER SH	.81	.83	.84	.85	.86	.87	.88	.90	--	
CAP'L SPENDING PER SH	1.98	1.49	1.58	1.96	1.96	2.24	2.44	3.28	--	
BOOK VALUE PER SH	10.06	10.46	10.94	11.52	11.60	11.95	12.23	12.67	--	
COMMON SHS OUTST'G (MILL)	7.94	7.97	8.04	8.17	8.27	8.38	8.46	8.57	--	
AVG ANN'L P/E RATIO	24.3	23.5	22.9	28.6	29.0	23.0	22.2	18.4	***22.1***	***22.3/NA***
RELATIVE P/E RATIO	1.33	1.34	1.21	1.51	1.57	1.22	1.34	1.22	--	
AVG ANN'L DIV'D YIELD	3.0%	3.0%	3.1%	3.4%	3.6%	3.6%	3.6%	4.1%	--	
SALES ($MILL)	45.8	47.1	48.5	47.5	46.9	59.0	61.3	59.4	--	***Bold figures are consensus earnings estimates and, using the recent prices, P/E ratios.***
OPERATING MARGIN	57.7%	52.1%	51.0%	48.3%	43.7%	40.8%	49.0%	35.8%	--	
DEPRECIATION ($MILL)	5.4	5.9	6.0	6.1	5.9	7.2	7.1	6.4	--	
NET PROFIT ($MILL)	8.8	9.2	9.4	7.2	6.7	8.8	9.4	10.2	--	
INCOME TAX RATE	33.8%	17.9%	22.9%	--	23.5%	32.4%	27.2%	19.5%	--	
NET PROFIT MARGIN	19.2%	19.5%	19.4%	15.1%	14.3%	14.9%	15.4%	17.2%	--	
WORKING CAP'L ($MILL)	d5.1	d3.9	d.7	13.0	1.2	8.1	d3.3	d13.1	--	
LONG-TERM DEBT ($MILL)	64.8	64.8	66.4	77.4	77.3	92.3	92.2	112.0	--	
SHR. EQUITY ($MILL)	80.7	84.2	88.7	94.9	96.7	100.9	104.2	109.3	--	
RETURN ON TOTAL CAP'L	7.4%	7.5%	7.0%	5.0%	4.9%	5.5%	5.9%	5.5%	--	
RETURN ON SHR. EQUITY	10.9%	10.9%	10.6%	7.5%	6.9%	8.7%	9.0%	9.3%	--	
RETAINED TO COM EQ	3.1%	3.2%	3.1%	.3%	NMF	1.6%	1.9%	2.3%	--	
ALL DIV'DS TO NET PROF	72%	71%	71%	95%	105%	82%	79%	76%	--	

[A] *No. of analysts changing earn. est. in last 8 days: 0 up, 0 down, consensus 5-year earnings growth not available.* [B] *Based upon one analyst's estimate.* [C] *Based upon one analyst's estimate.*

ANNUAL RATES

of change (per share)	5 Yrs.	1 Yr.
Sales	3.5%	-4.5%
"Cash Flow"	0.5%	-0.5%
Earnings	-0.5%	7.0%
Dividends	1.5%	2.5%
Book Value	3.0%	3.5%

QUARTERLY SALES ($mill.)

Fiscal Year	1Q	2Q	3Q	4Q	Full Year
12/31/08	13.6	16.0	17.0	14.7	61.3
12/31/09	13.4	15.2	16.6	14.2	59.4
12/31/10	13.8	17.5	22.7		
12/31/11					

EARNINGS PER SHARE

Fiscal Year	1Q	2Q	3Q	4Q	Full Year
12/31/07	.18	.22	.46	.19	1.05
12/31/08	.20	.35	.34	.22	1.11
12/31/09	.13	.27	.67	.12	1.19
12/31/10	.12	.27	.54	***.18***	
12/31/11	***.13***	***.30***			

QUARTERLY DIVIDENDS PAID

Calendar	1Q	2Q	3Q	4Q	Full Year
2008	.218	.218	.222	.222	.88
2009	.222	.222	.228	.228	.90
2010	.228	.228	.233	.233	.92
2011					

INSTITUTIONAL DECISIONS

	1Q'10	2Q'10	3Q'10
to Buy	28	30	21
to Sell	23	23	21
Hld's(000)	2926	2790	2747

ASSETS ($mill.)	2008	2009	9/30/10
Cash Assets	.7	5.4	1.2
Receivables	12.0	6.5	20.4
Inventory (Avg cost)	1.1	1.1	1.3
Other	2.0	7.0	3.4
Current Assets	15.8	20.0	26.3
Property, Plant & Equip, at cost	418.1	448.2	- -
Accum Depreciation	115.8	123.0	- -
Net Property	302.3	325.2	345.0
Other	54.3	70.1	56.5
Total Assets	372.4	415.3	427.8
LIABILITIES ($mill.)			
Accts Payable	5.7	6.5	7.7
Debt Due	12.1	25.0	31.0
Other	1.3	1.6	2.4
Current Liab	19.1	33.1	41.1

LONG-TERM DEBT AND EQUITY as of 9/30/10

Total Debt $142.8 mill. **Due in 5 Yrs.** NA
LT Debt $111.7 mill.
Including Cap. Leases NA
(50% of Cap'l)
Leases, Uncapitalized Annual rentals NA

Pension Liability $14.9 mill. in '09 vs. $16.7 mill. in '08

Pfd Stock $.8 mill. **Pfd Div'd Paid** NMF

Common Stock 8,654,000 shares
(50% of Cap'l)

INDUSTRY: Water Utility

BUSINESS: Connecticut Water Service, Inc. primarily operates as a water utility provider. The company operates through three segments: Water Activities, Real Estate Transactions, and Services and Rentals. The Water Activities segment supplies public drinking water to its customers. Its Real Estate Transactions segment involves in the sale of its limited excess real estate holdings. The Services and Rentals segment provides contracted services to water and wastewater utilities and other clients, as well as leases certain properties to third parties. This segment's services include contract operations of water and wastewater facilities; Linebacker, its service line protection plan for public drinking water customers; and provision of bulk deliveries of emergency drinking water to businesses and residences via tanker truck. As of December 31, 2009, Connecticut Water Service provided water to more than 90,000 customers in 54 towns throughout Connecticut. Has 225 employees. Chairman, C.E.O. & President: Eric W. Thornburg. Inc.: CT. Address: 93 West Main Street, Clinton, CT 06413. Tel.: (860) 669-8636. Internet: http://www.ctwater.com.

W.T.

January 21, 2011

TOTAL SHAREHOLDER RETURN

Dividends plus appreciation as of 12/31/2010

3 Mos.	6 Mos.	1 Yr.	3 Yrs.	5 Yrs.
17.48%	35.27%	17.13%	32.93%	37.37%

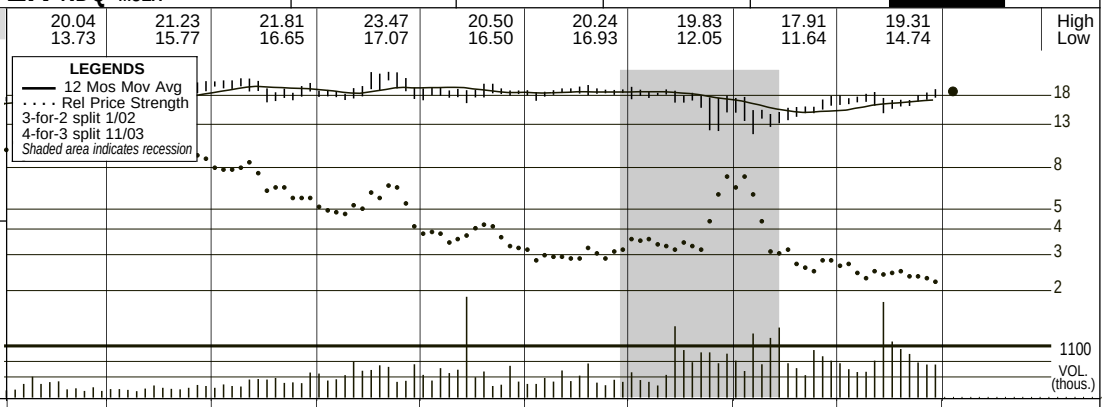
MIDDLESEX WATER NDQ--MSEX

RECENT PRICE **18.83** | TRAILING P/E RATIO **20.9** | RELATIVE P/E RATIO **1.13** | DIV'D YLD **3.9%** | **VALUE LINE**

RANKS

PERFORMANCE	**3**	*Average*
Technical	3	*Average*
SAFETY	**2**	*Above Average*
BETA .75	(1.00 = Market)	

Financial Strength	B++
Price Stability	95
Price Growth Persistence	35
Earnings Predictability	90



© VALUE LINE PUBLISHING LLC	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011/2012
SALES PER SH	5.98	6.12	6.25	6.44	6.16	6.50	6.79	6.75	--	
"CASH FLOW" PER SH	1.20	1.15	1.28	1.33	1.33	1.49	1.53	1.40	--	
EARNINGS PER SH	.73	.61	.73	.71	.82	.87	.89	.72	***.94*** [A,B]	***.95*** [C]***/NA***
DIV'DS DECL'D PER SH	.63	.65	.66	.67	.68	.69	.70	.71	--	
CAP'L SPENDING PER SH	1.59	1.87	2.54	2.18	2.31	1.66	2.12	1.49	--	
BOOK VALUE PER SH	7.39	7.60	8.02	8.26	9.52	10.05	10.03	10.33	--	
COMMON SHS OUTST'G (MILL)	10.36	10.48	11.36	11.58	13.17	13.25	13.40	13.52	--	
AVG ANN'L P/E RATIO	23.5	30.0	26.4	27.4	22.7	21.6	19.8	21.0	***20.0***	***19.8/NA***
RELATIVE P/E RATIO	1.28	1.71	1.39	1.45	1.23	1.15	1.19	1.40	--	
AVG ANN'L DIV'D YIELD	3.7%	3.5%	3.4%	3.5%	3.7%	3.7%	4.0%	4.7%	--	
SALES ($MILL)	61.9	64.1	71.0	74.6	81.1	86.1	91.0	91.2	--	
OPERATING MARGIN	47.1%	44.0%	44.4%	44.4%	47.4%	47.0%	46.9%	42.6%	--	
DEPRECIATION ($MILL)	5.0	5.6	6.4	7.2	7.8	8.2	8.5	9.2	--	
NET PROFIT ($MILL)	7.8	6.6	8.4	8.5	10.0	11.8	12.2	10.0	--	
INCOME TAX RATE	33.3%	32.8%	31.1%	27.6%	33.4%	32.6%	33.2%	34.1%	--	
NET PROFIT MARGIN	12.5%	10.3%	11.9%	11.4%	12.4%	13.8%	13.4%	10.9%	--	
WORKING CAP'L ($MILL)	d9.3	d13.3	d11.8	d4.5	2.8	d9.6	d40.9	d38.6	--	
LONG-TERM DEBT ($MILL)	87.5	97.4	115.3	128.2	130.7	131.6	118.2	124.9	--	
SHR. EQUITY ($MILL)	80.6	83.7	99.2	103.6	133.3	137.1	141.2	143.0	--	
RETURN ON TOTAL CAP'L	6.0%	5.0%	5.1%	5.0%	5.1%	5.6%	5.8%	5.0%	--	
RETURN ON SHR. EQUITY	9.6%	7.9%	8.5%	8.2%	7.5%	8.6%	8.6%	7.0%	--	
RETAINED TO COM EQ	1.3%	NMF	.9%	.6%	1.3%	1.8%	2.0%	.1%	--	
ALL DIV'DS TO NET PROF	87%	106%	90%	94%	84%	79%	78%	98%	--	

Bold figures are consensus earnings estimates and, using the recent prices, P/E ratios.

[A]*No. of analysts changing earn. est. in last 8 days: 0 up, 0 down, consensus 5-year earnings growth not available.* [B]*Based upon one analyst's estimate.* [C]*Based upon one analyst's estimate.*

ANNUAL RATES

of change (per share)	5 Yrs.	1 Yr.
Sales	2.0%	-0.5%
"Cash Flow"	4.0%	-8.5%
Earnings	3.5%	-19.0%
Dividends	1.5%	1.5%
Book Value	5.5%	3.0%

Fiscal Year	QUARTERLY SALES ($mill.) 1Q	2Q	3Q	4Q	Full Year
12/31/08	20.8	23.0	25.7	21.5	91.0
12/31/09	20.6	23.1	25.5	22.0	91.2
12/31/10	21.0	26.5	29.6		
12/31/11					

Fiscal Year	EARNINGS PER SHARE 1Q	2Q	3Q	4Q	Full Year
12/31/07	.13	.24	.31	.19	.87
12/31/08	.15	.26	.35	.13	.89
12/31/09	.10	.21	.29	.12	.72
12/31/10	.11	.31	.36	***.15***	
12/31/11	***.14***	***.31***			

Cal-endar	QUARTERLY DIVIDENDS PAID 1Q	2Q	3Q	4Q	Full Year
2008	.175	.175	.175	.178	.70
2009	.178	.178	.178	.18	.71
2010	.18	.18	.18	.183	.72
2011					

INSTITUTIONAL DECISIONS

	1Q'10	2Q'10	3Q'10
to Buy	24	40	30
to Sell	28	21	24
Hld's(000)	4811	5706	5930

ASSETS ($mill.)	2008	2009	9/30/10
Cash Assets	3.3	4.3	3.1
Receivables	14.3	10.6	21.1
Inventory (Avg cost)	1.5	1.6	1.9
Other	1.5	5.5	1.6
Current Assets	20.6	22.0	27.7
Property, Plant & Equip, at cost	436.8	453.6	- -
Accum Depreciation	70.5	77.1	- -
Net Property	366.3	376.5	400.9
Other	53.1	59.6	51.1
Total Assets	440.0	458.1	479.7
LIABILITIES ($mill.)			
Accts Payable	5.7	4.3	5.5
Debt Due	43.9	46.6	23.2
Other	11.9	9.8	12.7
Current Liab	61.5	60.7	41.4

LONG-TERM DEBT AND EQUITY as of 9/30/10

Total Debt $153.7 mill. **Due in 5 Yrs.** NA
LT Debt $130.6 mill.
Including Cap. Leases NA (43% of Cap'l)
Leases, Uncapitalized Annual rentals NA

Pension Liability $25.7 mill. in '09 vs. $25.5 mill. in '08

Pfd Stock $3.4 mill. **Pfd Div'd Paid** $.2 mill. (1% of Cap'l)

Common Stock 15,530,000 shares (56% of Cap'l)

INDUSTRY: Water Utility

BUSINESS: Middlesex Water Company engages in the ownership and operation of regulated water utility systems in New Jersey and Delaware, and a regulated wastewater utility in NJ. The company offers contract operations services and a service line maintenance program through its nonregulated subsidiary, Utility Service Affiliates, Inc. Its water utility system treats, stores, and distributes water for residential, commercial, industrial, and fire prevention purposes. It also provides water treatment and pumping services to the Township of East Brunswick, as well as water and wastewater services to residents in Southampton Township. Middlesex Water's Delaware subsidiaries provide water services to retail customers in New Castle, Kent, and Sussex counties. In October, Middlesex Water announced that Annette Catino resigned from its board of directors. Has 285 employees. Chairman: Dennis W. Doll. Address: 1500 Ronson Rd, P.O. BOX 1500, Iselin, NJ 08830. Tel.: 732-634-1500. Internet: http://www.middlesexwater.com.

W.T.

January 21, 2011

TOTAL SHAREHOLDER RETURN

Dividends plus appreciation as of 12/31/2010

3 Mos.	6 Mos.	1 Yr.	3 Yrs.	5 Yrs.
10.07%	18.22%	8.55%	10.07%	28.20%

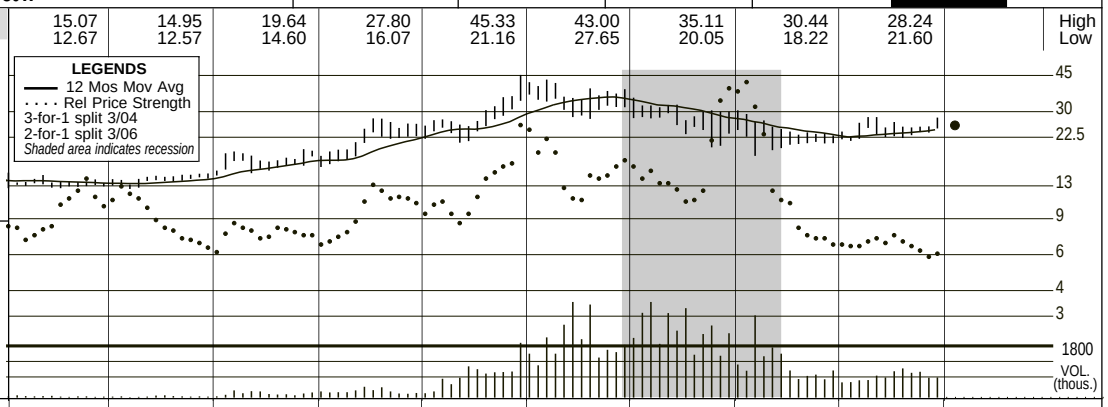
SJW CORP. NYSE--SJW

RECENT PRICE **25.71** | TRAILING P/E RATIO **29.9** | RELATIVE P/E RATIO **1.62** | DIV'D YLD **2.6%** | **VALUE LINE**

RANKS

PERFORMANCE 3 *Average*
Technical 3 *Average*
SAFETY 3 *Average*
BETA .90 (1.00 = Market)

Financial Strength B+
Price Stability 70
Price Growth Persistence 85
Earnings Predictability 85



© VALUE LINE PUBLISHING LLC	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011/2012
SALES PER SH	7.97	8.20	9.14	9.86	10.35	11.25	12.12	11.68	--	
"CASH FLOW" PER SH	1.55	1.75	1.89	2.21	2.38	2.30	2.44	2.21	--	
EARNINGS PER SH	.78	.91	.87	1.12	1.19	1.04	1.08	.81	***.98*** [A,B]	***1.05*** [C]***/NA***
DIV'DS DECL'D PER SH	.46	.49	.51	.53	.57	.61	.65	.66	--	
CAP'L SPENDING PER SH	2.06	3.41	2.31	2.83	3.87	6.62	3.79	3.17	--	
BOOK VALUE PER SH	8.40	9.11	10.11	10.72	12.48	12.90	13.99	13.66	--	
COMMON SHS OUTST'G (MILL)	18.27	18.27	18.27	18.27	18.28	18.36	18.18	18.50	--	
AVG ANN'L P/E RATIO	17.3	15.4	19.6	19.7	23.5	33.4	26.2	28.7	***26.2***	***24.5/NA***
RELATIVE P/E RATIO	.94	.88	1.04	1.04	1.27	1.77	1.58	1.91	--	
AVG ANN'L DIV'D YIELD	3.4%	3.5%	3.0%	2.4%	2.0%	1.7%	2.3%	2.8%	--	
SALES ($MILL)	145.7	149.7	166.9	180.1	189.2	206.6	220.3	216.1	--	***Bold figures are consensus earnings estimates and, using the recent prices, P/E ratios.***
OPERATING MARGIN	63.7%	56.0%	56.4%	55.9%	57.0%	41.8%	42.4%	42.5%	--	
DEPRECIATION ($MILL)	14.0	15.2	18.5	19.7	21.3	22.9	24.0	25.6	--	
NET PROFIT ($MILL)	14.2	16.7	16.0	20.7	22.2	19.3	20.2	15.2	--	
INCOME TAX RATE	40.4%	36.2%	42.1%	41.6%	40.8%	39.4%	39.5%	40.4%	--	
NET PROFIT MARGIN	9.8%	11.2%	9.6%	11.5%	11.7%	9.4%	9.2%	7.0%	--	
WORKING CAP'L ($MILL)	d4.9	12.0	13.0	10.8	22.2	d1.4	d11.3	d4.0	--	
LONG-TERM DEBT ($MILL)	110.0	139.6	143.6	145.3	163.6	216.3	216.6	246.9	--	
SHR. EQUITY ($MILL)	153.5	166.4	184.7	195.9	228.2	236.9	254.3	252.8	--	
RETURN ON TOTAL CAP'L	6.9%	6.9%	6.5%	7.6%	7.0%	5.7%	5.8%	4.4%	--	
RETURN ON SHR. EQUITY	9.3%	10.0%	8.7%	10.6%	9.7%	8.2%	8.0%	6.0%	--	
RETAINED TO COM EQ	3.8%	4.7%	3.6%	5.6%	5.2%	3.5%	3.3%	1.2%	--	
ALL DIV'DS TO NET PROF	59%	53%	58%	47%	46%	57%	59%	80%	--	

[A]*No. of analysts changing earn. est. in last 8 days: 0 up, 0 down, consensus 5-year earnings growth not available.* [B]*Based upon 2 analysts' estimates.* [C]*Based upon 2 analysts' estimates.*

ANNUAL RATES

of change (per share)	5 Yrs.	1 Yr.
Sales	6.5%	-3.5%
"Cash Flow"	6.0%	-9.5%
Earnings	3.0%	-25.5%
Dividends	5.5%	2.5%
Book Value	8.0%	-2.5%

QUARTERLY SALES ($mill.)

Fiscal Year	1Q	2Q	3Q	4Q	Full Year
12/31/08	41.3	60.0	69.5	49.5	220.3
12/31/09	40.0	58.2	69.3	48.6	216.1
12/31/10	40.4	54.1	70.3		
12/31/11					

EARNINGS PER SHARE

Fiscal Year	1Q	2Q	3Q	4Q	Full Year
12/31/07	.12	.29	.43	.20	1.04
12/31/08	.15	.34	.44	.15	1.08
12/31/09	.01	.23	.43	.14	.81
12/31/10	.05	.24	.43	***.19***	
12/31/11	***.05***	***.09***			

QUARTERLY DIVIDENDS PAID

Cal-endar	1Q	2Q	3Q	4Q	Full Year
2008	.161	.161	.161	.161	.64
2009	.165	.165	.165	.165	.66
2010	.17	.17	.17	.17	.68
2011					

INSTITUTIONAL DECISIONS

	1Q'10	2Q'10	3Q'10
to Buy	26	31	26
to Sell	32	32	28
Hld's(000)	8866	8930	8969

ASSETS ($mill.)	2008	2009	9/30/10
Cash Assets	3.4	1.4	3.3
Receivables	24.5	23.3	35.6
Inventory	.9	1.0	1.0
Other	3.2	2.3	2.7
Current Assets	32.0	28.0	42.6
Property, Plant & Equip, at cost	958.7	1020.7	- -
Accum Depreciation	274.5	302.2	- -
Net Property	684.2	718.5	795.0
Other	134.7	132.0	117.8
Total Assets	850.9	878.5	955.4
LIABILITIES ($mill.)			
Accts Payable	5.8	6.6	21.3
Debt Due	19.1	6.9	4.6
Other	18.4	18.5	27.3
Current Liab	43.3	32.0	53.2

LONG-TERM DEBT AND EQUITY as of 9/30/10

Total Debt $300.6 mill. **Due in 5 Yrs.** NA
LT Debt $296.0 mill.
Including Cap. Leases NA (53% of Cap'l)
Leases, Uncapitalized Annual rentals NA

Pension Liability $47.5 mill. in '09 vs. $42.3 mill. in '08

Pfd Stock None **Pfd Div'd Paid** None

Common Stock 18,541,000 shares (47% of Cap'l)

INDUSTRY: Water Utility

BUSINESS: SJW Corporation, through its subsidiaries, engages in the production, purchase, storage, purification, distribution, and retail sale of water. The company offers nonregulated water-related services, including water system operations, cash remittances, and maintenance contract services. SJW also owns undeveloped land; a 70% limited partnership interest in 444 West Santa Clara Street, L.P.; and operates commercial buildings in Arizona, California, Connecticut, Florida, Tennessee, and Texas. As of September 30, 2010, SJW provided water service to approximately 226,000 connections that served a population of approximately one million people in the San Jose area. It also provides water service to approximately 8,700 connections that serve approximately 36,000 residents in a service area in the region between San Antonio and Austin, Texas. Has 375 employees. Chairman: Charles J. Toeniskoetter. Inc.: CA. Address: 110 W. Taylor Street, San Jose, CA 95110. Tel.: (408) 279-7800. Internet: http://www.sjwater.com.

W.T.

January 21, 2011

TOTAL SHAREHOLDER RETURN

Dividends plus appreciation as of 12/31/2010

3 Mos.	6 Mos.	1 Yr.	3 Yrs.	5 Yrs.
8.21%	14.51%	20.67%	-17.28%	31.13%

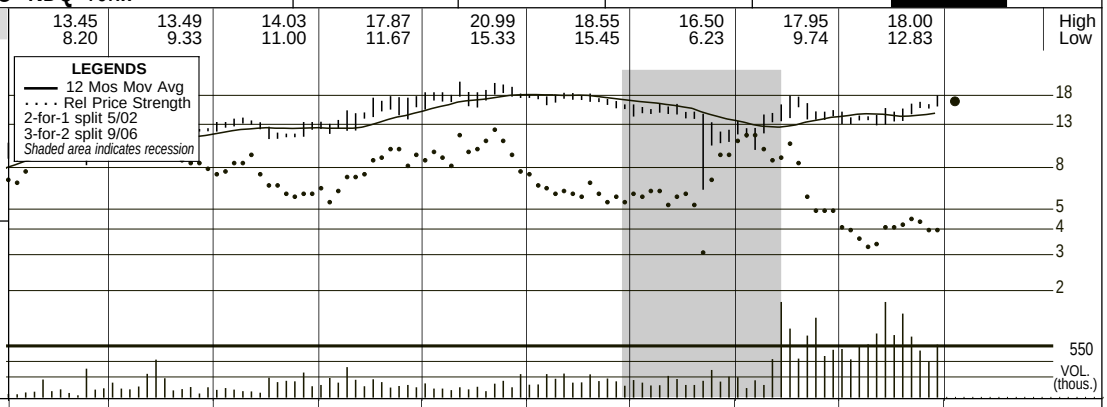
YORK WATER CO NDQ--YORW

RECENT PRICE **16.84** | TRAILING P/E RATIO **24.1** | RELATIVE P/E RATIO **1.30** | DIV'D YLD **3.1%** | **VALUE LINE**

RANKS

PERFORMANCE	**2**	*Above Average*
Technical	**3**	*Average*
SAFETY	**2**	*Above Average*
BETA .70	(1.00 = Market)	

Financial Strength	B+
Price Stability	90
Price Growth Persistence	60
Earnings Predictability	100



© VALUE LINE PUBLISHING LLC	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011/2012
REVENUES PER SH	2.05	2.17	2.18	2.58	2.56	2.79	2.89	2.95	--	
"CASH FLOW" PER SH	.57	.65	.65	.79	.77	.86	.88	.95	--	
EARNINGS PER SH	.40	.47	.49	.56	.58	.57	.57	.64	***.71*** [A,B]	***.76*** [C]***/NA***
DIV'D DECL'D PER SH	.35	.37	.39	.42	.45	.48	.49	.51	--	
CAP'L SPENDING PER SH	.66	1.07	2.50	1.69	1.85	1.69	2.17	1.18	--	
BOOK VALUE PER SH	3.90	4.06	4.65	4.85	5.84	5.97	6.14	6.92	--	
COMMON SHS OUTST'G (MILL)	9.55	9.63	10.33	10.40	11.20	11.27	11.37	12.56	--	
AVG ANN'L P/E RATIO	26.9	24.5	25.7	26.3	31.2	30.3	24.6	21.9	***23.7***	***22.2/NA***
RELATIVE P/E RATIO	1.47	1.40	1.36	1.39	1.68	1.61	1.48	1.46	--	
AVG ANN'L DIV'D YIELD	3.3%	3.2%	3.1%	2.9%	2.5%	2.8%	3.5%	3.6%	--	
REVENUES ($MILL)	19.6	20.9	22.5	26.8	28.7	31.4	32.8	37.0	--	***Bold figures are consensus earnings estimates and, using the recent prices, P/E ratios.***
NET PROFIT ($MILL)	3.8	4.4	4.8	5.8	6.1	6.4	6.4	7.5	--	
INCOME TAX RATE	34.9%	34.8%	36.7%	36.7%	34.4%	36.5%	36.1%	37.9%	--	
AFUDC % TO NET PROFIT	3.7%	--	--	--	7.2%	3.6%	10.1%	--	--	
LONG-TERM DEBT RATIO	46.7%	43.4%	42.5%	44.1%	48.3%	46.5%	54.5%	45.7%	--	
COMMON EQUITY RATIO	53.3%	56.6%	57.5%	55.9%	51.7%	53.5%	45.5%	54.3%	--	
TOTAL CAPITAL ($MILL)	69.9	69.0	83.6	90.3	126.5	125.7	153.4	160.1	--	
NET PLANT ($MILL)	106.7	116.5	140.0	155.3	174.4	191.6	211.4	222.0	--	
RETURN ON TOTAL CAP'L	7.4%	8.5%	7.6%	8.4%	6.2%	6.7%	5.7%	6.2%	--	
RETURN ON SHR. EQUITY	10.2%	11.4%	10.0%	11.6%	9.3%	9.5%	9.2%	8.6%	--	
RETURN ON COM EQUITY	10.2%	11.4%	10.0%	11.6%	9.3%	9.5%	9.2%	8.6%	--	
RETAINED TO COM EQ	1.3%	2.6%	2.1%	3.0%	2.2%	1.7%	1.4%	1.9%	--	
ALL DIV'DS TO NET PROF	88%	77%	79%	74%	77%	82%	85%	78%	--	

[A]*No. of analysts changing earn. est. in last 8 days: 0 up, 0 down, consensus 5-year earnings growth not available.* [B]*Based upon 3 analysts' estimates.* [C]*Based upon 3 analysts' estimates.*

ANNUAL RATES

of change (per share)	5 Yrs.	1 Yr.
Revenues	6.0%	2.0%
"Cash Flow"	7.5%	7.5%
Earnings	5.5%	12.5%
Dividends	6.0%	3.5%
Book Value	8.5%	13.0%

QUARTERLY SALES ($mill.)

Fiscal Year	1Q	2Q	3Q	4Q	Full Year
12/31/08	7.5	7.8	8.6	8.9	32.8
12/31/09	8.8	9.2	9.8	9.2	37.0
12/31/10	9.0	9.7	10.5		
12/31/11					

EARNINGS PER SHARE

Fiscal Year	1Q	2Q	3Q	4Q	Full Year
12/31/07	.12	.15	.15	.15	.57
12/31/08	.11	.13	.15	.18	.57
12/31/09	.13	.17	.18	.16	.64
12/31/10	.15	.18	.21	***.17***	
12/31/11	***.16***	***.20***			

QUARTERLY DIVIDENDS PAID

Cal-endar	1Q	2Q	3Q	4Q	Full Year
2008	.121	.121	.121	.121	.48
2009	.126	.126	.126	.126	.50
2010	.128	.128	.128	.128	.51
2011	.131				

INSTITUTIONAL DECISIONS

	1Q'10	2Q'10	3Q'10
to Buy	21	29	21
to Sell	19	19	18
Hld's(000)	2763	2811	3078

ASSETS ($mill.)	2008	2009	9/30/10
Cash Assets	.0	.0	.0
Receivables	5.9	5.4	6.2
Inventory (Avg cost)	.7	.7	.6
Other	.7	1.0	1.4
Current Assets	7.3	7.1	8.2
Property, Plant & Equip, at cost	246.0	260.4	- -
Accum Depreciation	34.6	38.4	- -
Net Property	211.4	222.0	226.2
Other	21.7	19.7	21.6
Total Assets	240.4	248.8	256.0
LIABILITIES ($mill.)			
Accts Payable	1.6	1.4	3.1
Debt Due	9.1	9.3	3.0
Other	3.5	3.9	4.0
Current Liab	14.2	14.6	10.1

LONG-TERM DEBT AND EQUITY as of 9/30/10

Total Debt $81.2 mill. **Due in 5 Yrs.** NA
LT Debt $78.2 mill.
Including Cap. Leases NA (46% of Cap'l)
Leases, Uncapitalized Annual rentals NA

Pension Liability $8.8 mill. in '09 vs. $9.8 mill. in '08

Pfd Stock None **Pfd Div'd Paid** None

Common Stock 12,668,000 shares (54% of Cap'l)

INDUSTRY: Water Utility

BUSINESS: The York Water Company engages in the impounding, purification, and distribution of water in York County and Adams County, Pennsylvania. The company supplies water for residential, commercial, industrial, and other customers. It has two reservoirs, Lake Williams, which is 700 feet long and 58 feet high, and creates a reservoir covering approximately 165 acres containing about 870 million gallons of water; and Lake Redman, which is 1,000 feet long and 52 feet high and creates a reservoir covering approximately 290 acres containing about 1.3 billion gallons of water. In addition, it possesses a 15-mile pipeline from the Susquehanna River to Lake Redman that provides access to an additional supply of water. In September, The York Water filed a settlement petition of its pending rate case with the Pennsylvania Public Utility Commission. The settlement, which is joined in by all active parties, provides for an increase in annual base rate revenues of $3,400,000. Has 111 employees. C.E.O. & President: Jeffrey R. Hines. Inc.: PA. Address: 130 East Market Street, York, PA 17401. Tel.: (717) 845-3601. Internet: http://www.yorkwater.com. *W.T.*

January 21, 2011

TOTAL SHAREHOLDER RETURN

Dividends plus appreciation as of 12/31/2010

3 Mos.	6 Mos.	1 Yr.	3 Yrs.	5 Yrs.
8.66%	23.65%	23.17%	23.82%	17.43%

United Water Rhode Island, Inc.
Current Institutional Holdings and Individual Holdings
the Proxy Group of Eight Water Companies

	1 April 1, 2011 Percentage of Institutional Holdings	2 April 1, 2011 Percentage of Individual Holdings (1)
Proxy Group of Eight Water Companies		
American States Water Co.	60.08 %	39.92 %
American Water Works Co., Inc.	83.84	16.16
Aqua America, Inc.	40.92	59.08
California Water Service Group	50.29	49.71
Connecticut Water Service, Inc.	32.13	67.87
Middlesex Water Company	38.80	61.20
SJW Corporation	47.04	52.96
York Water Company	24.47	75.53
Average	47.20 %	52.80 %

Notes:
(1) (1 - column 1).

Source of Information: pro.edgar-online.com, April 11, 2011

United Water Rhode Island, Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		Proxy Group of Eight Water Companies
1.	Prospective Yield on Aaa Rated Corporate Bonds (1)	5.55 %
2.	Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A Rated Public Utility Bonds	0.51 (2)
3.	Adjusted Prospective Yield on A Rated Public Utility Bonds	6.06 %
4.	Adjustment to Reflect Bond Rating Difference of Proxy Group	0.16 (3)
5.	Adjusted Prospective Bond Yield	6.22 %
6.	Equity Risk Premium (4)	4.39
7.	Risk Premium Derived Common Equity Cost Rate	10.61 %

Notes:
(1) Derived in Note (4) on page 6 of this Schedule.
(2) The average yield spread of A rated public utility bonds over Aaa rated corporate bonds of 0.51% from page 4 of this Schedule.
(3) Adjustment to reflect the A3 Moody's bond rating of the proxy group of eight water companies as shown on page 2 of this Schedule. The 16 basis point adjustment is derived by taking 1/3 of the spread between Baa2 and A2 Public Utility Bonds (1/3 * 0.47% = 0.16%).
(4) From page 5 of this Schedule.

United Water Rhode Island, Inc.
Comparison of Bond Ratings, Business Risk and Financial Risk Profiles for the
Proxy Group of Eight Water Companies

		Moody's Bond Rating March 2011		Standard & Poor's Bond Rating March 2011							
		Bond Rating	Numerical Weighting (1)	Bond Rating	Numerical Weighting (1)	Credit Rating	Numerical Weighting (1)	Business Risk Profile (2)	Numerical Weighting (1)	Financial Risk Profile (2)	Numerical Weighting (1)
Proxy Group of Eight Water Companies											
American States Water Co.	(3)	A2	6.0	A+	5.0	A+	5.0	Excellent	1.0	Intermediate	3.0
American Water Works Co., Inc.	(4)	Baa1	8.0	A+	5.0	BBB+	8.0	Excellent	1.0	Aggressive	5.0
Aqua America, Inc.	(5)	NR	- -	AA-	4.0	A+	5.0	Excellent	1.0	Intermediate	3.0
California Water Service Group	(6)	NR	- -	AA-	4.0	A+	5.0	Excellent	1.0	Intermediate	3.0
Connecticut Water Service, Inc.	(7)	NR	- -	A	6.0	A	6.0	Excellent	1.0	Intermediate	3.0
Middlesex Water Company		NR	- -	A	6.0	A-	7.0	Excellent	1.0	Intermediate	3.0
SJW Corporation	(8)	NR	- -	A	6.0	A	6.0	Excellent	1.0	Intermediate	3.0
York Water Company		NR	- -	A-	7.0	A-	7.0	Excellent	1.0	Intermediate	3.0
	Average	A3	7.0	A+	5.4	A	6.1	Excellent	1.0	Intermediate	3.3

Notes:
(1) From page 3 of this Schedule.
(2) From Standard & Poor's Issuer Ranking: U.S. Investor-Owned Water Utilities, Strongest to Weakest, December 21, 2010.
(3) Ratings, business risk and financial risk profiles are those of Golden State Water Company.
(4) Rating, business risk and financial risk profiles are those of Pennsylvania and New Jersey American Water.
(5) Ratings, business risk and financial risk profiles are those of Aqua Pennsylvania, Inc.
(6) Ratings, business risk and financial risk profiles are those of California Water Service Co.
(7) Ratings, business risk and financial risk profiles are those of Connecticut Water Company.
(8) Ratings, business risk and financial risk profiles are those of San Jose Water Co.

Source Information: Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

United Water Rhode Island, Inc.
Numerical Assignment for
Moody's and Standard & Poor's Bond Ratings
and Standard & Poor's Business and Financial Risk Profiles

Moody's Bond Rating	Numerical Bond Weighting	Standard & Poor's Bond Rating
Aaa	1	AAA
Aa1	2	AA+
Aa2	3	AA
Aa3	4	AA-
A1	5	A+
A2	6	A
A3	7	A-
Baa1	8	BBB+
Baa2	9	BBB
Baa3	10	BBB-
Ba1	11	BB+
Ba2	12	BB
Ba3	13	BB-

Standard & Poor's

Business Risk Profile	Numerical Weighting	Financial Risk Profile	Numerical Weighting
Excellent	1	Minimal	1
Strong	2	Modest	2
Satisfactory	3	Intermediate	3
Fair	4	Significant	4
Weak	5	Aggressive	5
Vulnerable	6	Highly Leveraged	6

Moody's
Comparison of Interest Rate Trends
for the Three Months Ending February 2011 (1)

Months	Corporate Bonds Aaa Rated	Public Utility Bonds Aa Rated	Public Utility Bonds A Rated	Public Utility Bonds Baa Rated	Spread - Corporate v. Public Utility Bonds: Aa (Pub. Util.) over Aaa (Corp.)	Spread - Corporate v. Public Utility Bonds: A (Pub. Util.) over Aaa (Corp.)	Spread - Corporate v. Public Utility Bonds: Baa (Pub. Util.) over Aaa (Corp.)	Spread - Public Utility Bonds: A over Aa	Spread - Public Utility Bonds: Baa over A
February-11	5.22 %	5.42 %	5.68 %	6.10 %					
January-11	5.04	5.29	5.57	6.06					
December-10	5.02	5.32	5.56	6.04					
Average of Last 3 Months	5.09 %	5.34 %	5.60 %	6.07 %	0.25 %	0.51 %	0.98 %	0.26 %	0.47 %

Notes: (1) All yields are distributed yields.

Source of Information: Mergent Bond Record, March 2011, Vol. 78, No. 3.

Exhibit No.__
Schedule PMA-8
Page 4 of 8

United Water Rhode Island, Inc.
Judgment of Equity Risk Premium for
the Proxy Group of Eight Water Companies

Line No.		Proxy Group of Eight Water Companies
1.	Calculated equity risk premium based on the total market using the beta approach (1)	4.60 %
2.	Mean equity risk premium based on a study using the holding period returns of public utilities with A rated bonds (2)	4.17
3.	Average equity risk premium	4.39 %

Notes: (1) From page 6 of this Schedule.
(2) From page 8 of this Schedule.

United Water Rhode Island, Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
the Proxy Group of Eight Water Companies

Line No.		Proxy Group of Eight Water Companies
1.	Arithmetic mean total return rate on the Standard & Poor's 500 Composite Index - 1926-2010 (1)	11.90 %
2.	Arithmetic mean yield on Aaa and Aa Corporate Bonds 1926-2010 (2)	(6.10)
3.	Historical Equity Risk Premium	5.80 %
4.	Forecasted 3-5 year Total Annual Market Return (3)	12.34 %
5.	Prospective Yield an Aaa Rated Corporate Bonds (4)	(5.55)
6.	Forecasted Equity Risk Premium	6.79 %
7.	Conclusion of Equity Risk Premium (5)	6.30 %
8.	Adjusted Value Line Beta (6)	0.73
9.	Beta Adjusted Equity Risk Premium	4.60 %

Notes:

(1) Ibbotson Associates 2011 Valuation Yearbook - Market Results for 1926-2010, Morningstar, Inc., 2011 Chicago, IL.

(2) From Moody's Industrial Manual and Mergent Bond Record Monthly Update.

(3) From page 3 of Schedule PMA-10.

(4) Average forecast based upon six quarterly estimates of Aaa rated corporate bonds per the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts dated April 1, 2011 (see page 7 of this Schedule). The estimates are detailed below.

Second Quarter 2011	5.20 %
Third Quarter 2011	5.40
Fourth Quarter 2011	5.50
First Quarter 2012	5.60
Second Quarter 2012	5.70
Third Quarter 2012	5.90
Average	5.55 %

(5) The average of the historical equity risk premium of 5.80% from Line No. 3 and the forecasted equity risk premium of 6.50% from Line No. 6 ((5.80% + 6.50%) / 2 = 6.3%.

(6) From column 1 of page 2 of Schedule PMA-10.

Consensus Forecasts Of U.S. Interest Rates And Key Assumptions[1]

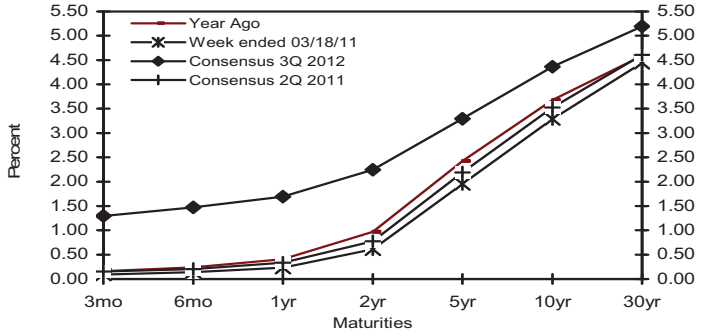
Interest Rates	Mar.18	Mar.11	Mar.4	Feb.25	Feb.	Jan.	Dec.	*Latest Q** *1Q 2011*	2Q 2011	3Q 2011	4Q 2011	1Q 2012	2Q 2012	3Q 2012
	History: Average For Week End				History: Average For Month				Consensus Forecasts-Quarterly Avg.					
Federal Funds Rate	0.14	0.15	0.15	0.15	0.16	0.17	0.19	*0.16*	**0.2**	**0.2**	**0.3**	**0.5**	**0.9**	**1.3**
Prime Rate	3.25	3.25	3.25	3.25	3.25	3.25	3.25	*3.25*	**3.3**	**3.3**	**3.3**	**3.6**	**3.9**	**4.3**
LIBOR, 3-mo.	0.31	0.31	0.31	0.31	0.31	0.30	0.29	*0.31*	**0.3**	**0.4**	**0.5**	**0.8**	**1.1**	**1.5**
Commercial Paper, 1-mo.	0.18	0.17	0.19	0.18	0.19	0.19	0.19	*0.19*	**0.2**	**0.3**	**0.4**	**0.7**	**1.1**	**1.5**
Treasury bill, 3-mo.	0.09	0.10	0.13	0.13	0.13	0.15	0.14	*0.13*	**0.2**	**0.2**	**0.3**	**0.6**	**0.9**	**1.3**
Treasury bill, 6-mo.	0.14	0.15	0.17	0.16	0.17	0.18	0.19	*0.17*	**0.2**	**0.3**	**0.4**	**0.7**	**1.1**	**1.5**
Treasury bill, 1 yr.	0.23	0.25	0.26	0.27	0.29	0.27	0.29	*0.27*	**0.3**	**0.4**	**0.7**	**1.0**	**1.3**	**1.7**
Treasury note, 2 yr.	0.61	0.68	0.70	0.73	0.77	0.61	0.62	*0.68*	**0.8**	**1.0**	**1.2**	**1.5**	**1.8**	**2.2**
Treasury note, 5 yr.	1.95	2.14	2.17	2.18	2.26	1.99	1.93	*2.10*	**2.2**	**2.4**	**2.6**	**2.8**	**3.0**	**3.3**
Treasury note, 10 yr.	3.29	3.46	3.47	3.46	3.58	3.39	3.29	*3.45*	**3.5**	**3.7**	**3.9**	**4.0**	**4.2**	**4.4**
Treasury note, 30 yr.	4.44	4.59	4.55	4.56	4.65	4.52	4.42	*4.56*	**4.6**	**4.7**	**4.9**	**4.9**	**5.0**	**5.2**
Corporate Aaa bond	5.07	5.17	5.14	5.17	5.22	5.04	5.02	*5.13*	**5.2**	**5.4**	**5.5**	**5.6**	**5.7**	**5.9**
Corporate Baa bond	5.98	6.08	6.05	6.06	6.15	6.09	6.10	*6.09*	**6.2**	**6.3**	**6.5**	**6.6**	**6.7**	**6.8**
State & Local bonds	4.86	4.91	4.90	4.95	5.15	5.28	4.92	*5.11*	**5.1**	**5.2**	**5.3**	**5.4**	**5.4**	**5.5**
Home mortgage rate	4.76	4.88	4.87	4.95	4.95	4.76	4.71	*4.84*	**5.0**	**5.1**	**5.3**	**5.5**	**5.6**	**5.8**

Key Assumptions	2Q 2009	3Q 2009	4Q 2009	1Q 2010	2Q 2010	3Q 2010	4Q 2010	*1Q** *2011*	2Q 2011	3Q 2011	4Q 2011	1Q 2012	2Q 2012	3Q 2012
	History								Consensus Forecasts-Quarterly					
Major Currency Index	79.6	76.4	72.8	74.8	77.6	75.9	73.0	*71.0*	**71.9**	**72.1**	**72.4**	**72.5**	**73.1**	**73.5**
Real GDP	-0.7	1.6	5.0	3.7	1.7	2.6	3.1	*3.1*	**3.3**	**3.4**	**3.4**	**3.1**	**3.2**	**3.2**
GDP Price Index	0.3	0.7	-0.2	1.0	1.9	2.1	0.4	*2.3*	**1.7**	**1.6**	**1.7**	**1.9**	**1.8**	**1.9**
Consumer Price Index	1.9	3.7	2.7	1.3	-0.5	1.4	2.6	*4.0*	**2.6**	**2.1**	**2.0**	**2.1**	**2.1**	**2.2**

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data for interest rates except LIBOR is from Federal Reserve Release (FRSR) H.15. LIBOR quotes available from *The Wall Street Journal*. Interest rate definitions are the same as those in FRSR H.15. Treasury yields are reported on a constant maturity basis. Historical data for the Fed's Major Currency Index is from FRSR H.10 and G.5. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS). ***Interest rate data for 1Q 2011 based on historical data through the week ended March 18th.** ***Data for 1Q 2011 Major Currency Index also is based on data through week ended March 18th. Figures for 1Q 2011 Real GDP, GDP Chained Price Index and Consumer Price Index are consensus forecasts based on a special question asked of the panelists this month (see page 14)**.

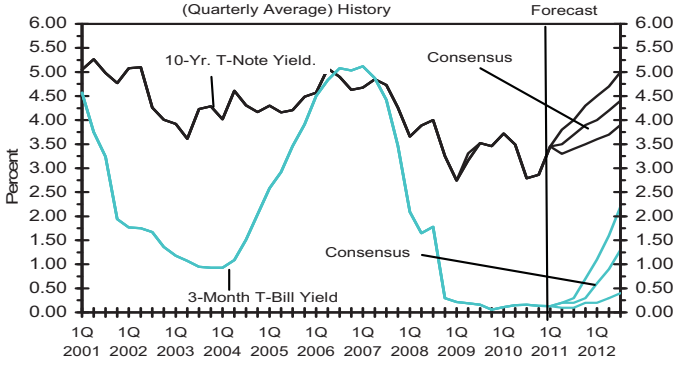
U.S. Treasury Yield Curve

Week ended March 18, 2011 and Year Ago vs.
2Q 2011 and 3Q 2012 Consensus Forecasts



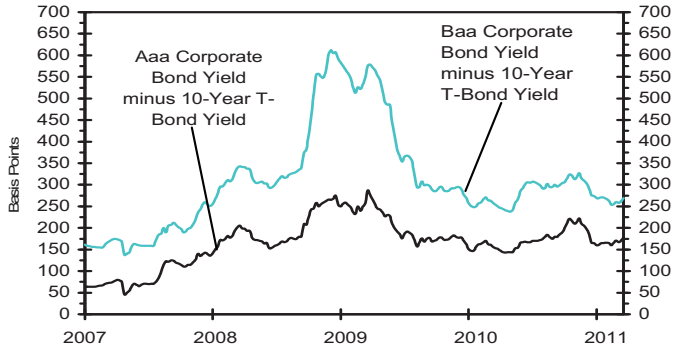
U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield

(Quarterly Average) History — Forecast



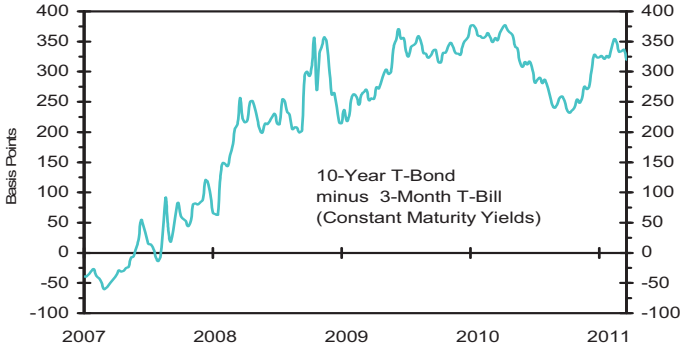
Corporate Bond Spreads

As of week ended March 18, 2011



U.S. Treasury Yield Curve

As of week ended March 18, 2011



United Water Rhode Island, Inc.
Derivation of Mean Equity Risk Premium Based on a Study
Using Holding Period Returns of Public Utilities

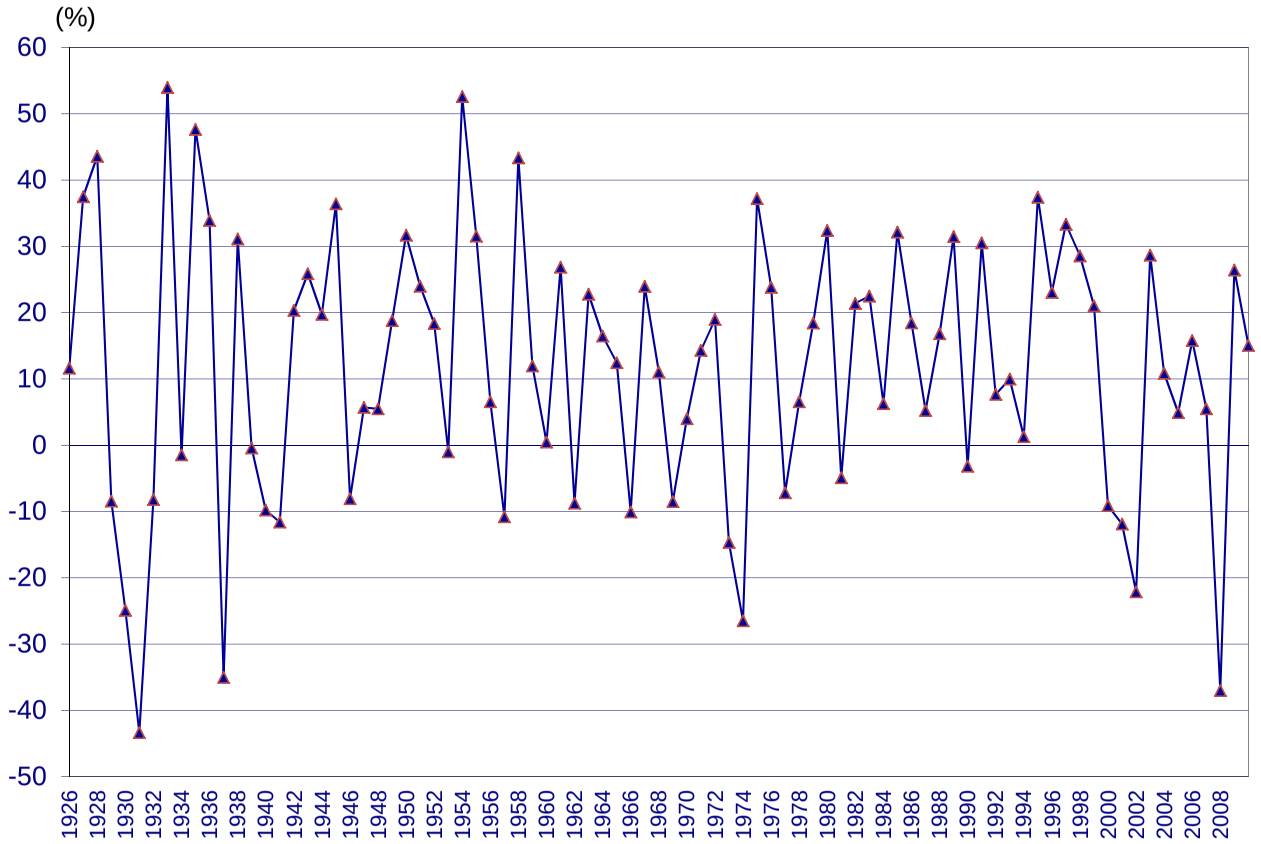
Line No.		Over A Rated Moody's Public Utility Bonds - AUS Consultants Study (1)
1.	Arithmetic Mean Holding Period Returns on the Standard & Poor's Utility Index 1926 - 2009 (2):	10.76 %
2.	Arithmetic Mean Yield on Moody's A Rated Public Utility Yields 1926 - 2009	(6.59)
3.	Equity Risk Premium	4.17 %

Notes:

(1) S&P Public Utility Index and Moody's Public Utility Bond Average Annual Yields 1928-2009, (AUS Consultants - Utility Services, 2010).

(2) Holding period returns are calculated based upon income received (dividends and interest) plus the relative change in the market value of a security over a one-year holding period.

United Water Rhode Island, Inc.
Large Company Stock Returns
From 1926 to 2010

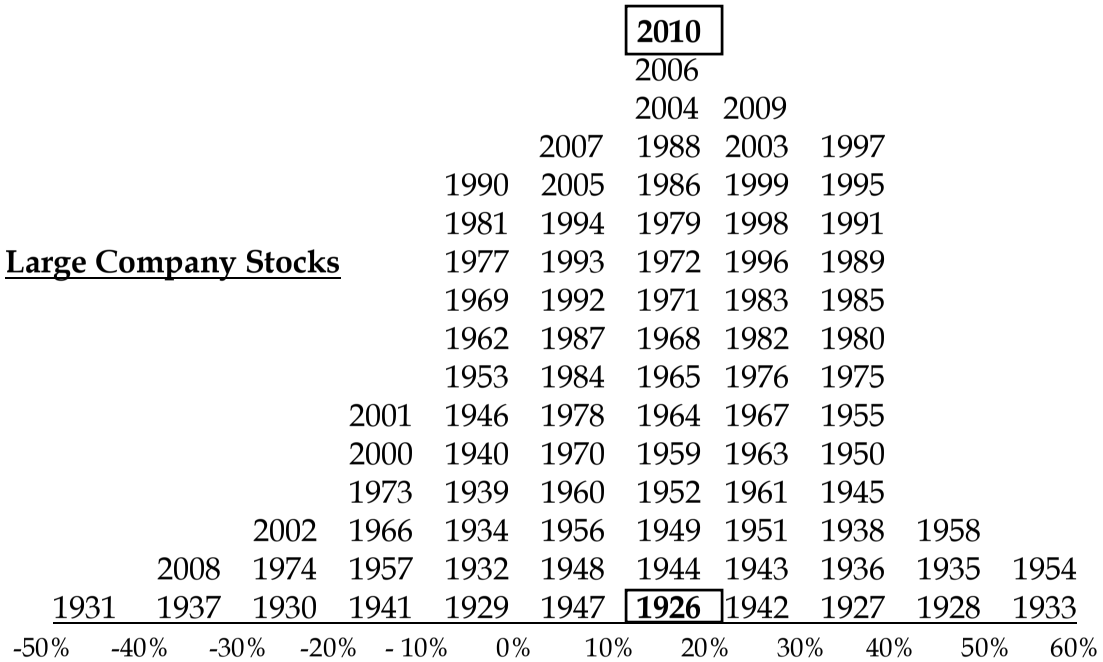


Source of Information:

Ibbotson® SBBI® - 2011 Valuation Yearbook - Market Results for Stocks Bonds Bills and Inflation - 1926-2010, Morningstar, Inc., 2011 Chicago, IL.

Exhibit No.__
Schedule PMA-9
Page 1 of 14

United Water Rhode Island, Inc.
Total Returns on Large Company Stocks
1926 to 2010

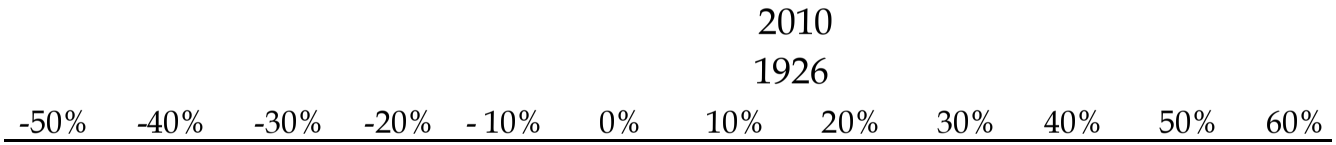


Arithmetic Mean: $r_A = \sum_{t=1}^{n} r_t / n$

Source : Ibbotson® SBBI ® – 2011 Valuation Yearbook – Market Results for Stocks, Bonds, Bills, and Inflation –1926-2010
Morningstar, Inc., 2011 Chicago, IL

United Water Rhode Island, Inc.
Total Returns on Large Company Stocks
1926 to 2010

Large Company Stocks



Geometric Mean: $r_G = \left[V_n / V_0 \right]^{1/n} - 1$

Source : Ibbotson® SBBI ® – 2011 Valuation Yearbook – Market Results for Stocks, Bonds, Bills, and Inflation –1926-2010
Morningstar, Inc., 2011 Chicago, IL

Ibbotson® SBBI®
2011 Valuation Yearbook

Market Results for
Stocks, Bonds, Bills, and Inflation
1926–2010

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Chapter 5

The Equity Risk Premium

The expected equity risk premium can be defined as the additional return an investor expects to receive to compensate for the additional risk associated with investing in equities as opposed to investing in riskless assets. It is an essential component in several cost of equity estimation models, including the buildup method, the capital asset pricing model (CAPM), and the Fama-French three factor model. It is important to note that the expected equity risk premium, as it is used in discount rates and cost of capital analysis, is a forward-looking concept. That is, the equity risk premium that is used in the discount rate should be reflective of what investors think the risk premium will be going forward.

Unfortunately, the expected equity risk premium is unobservable in the market and therefore must be estimated. Typically, this estimation is arrived at through the use of historical data. The historical equity risk premium can be calculated by subtracting the long-term average of the income return on the riskless asset (Treasuries) from the long-term average stock market return (measured over the same period as that of the riskless asset). In using a historical measure of the equity risk premium, one assumes that what has happened in the past is representative of what might be expected in the future. In other words, the assumption one makes when using historical data to measure the expected equity risk premium is that the relationship between the returns of the risky asset (equities) and the riskless asset (Treasuries) is stable. The stability of this relationship will be examined later in this chapter.

Since the expected equity risk premium must be estimated, there is much controversy regarding how the estimation should be conducted. A variety of different approaches to calculating the equity risk premium have been utilized over the years. Such studies can be categorized into four groups based on the approaches they have taken. The first group of studies tries to derive the equity risk premium from historical returns between stocks and bonds as was mentioned above. The second group, embracing a supply side model, uses fundamental information such as earnings, dividends, or overall economic productivity to measure the expected equity risk premium. A third group adopts demand side models that derive the expected returns of equities through the payoff demanded by investors for bearing the risk of equity investments.[1] The opinions of financial professionals through broad surveys are relied upon by the fourth and final group.

The range of equity risk premium estimates used in practice is surprisingly large. Using a low equity risk premium estimate as opposed to a high estimate can have a significant impact on the estimated value of a stream of cash flows. This chapter addresses many of the controversies surrounding estimation of the equity risk premium and focuses primarily on the historical calculation but also discusses the supply side model.

Calculating the Historical Equity Risk Premium

In measuring the historical equity risk premium one must make a number of decisions that can impact the resulting figure; some decisions have a greater impact than others. These decisions include selecting the stock market benchmark, the risk-free asset, either an arithmetic or a geometric average, and the time period for measurement. Each of these factors has an impact on the resulting equity risk premium estimate.

The Stock Market Benchmark

The stock market benchmark chosen should be a broad index that reflects the behavior of the market as a whole. Two examples of commonly used indexes are the S&P 500® and the New York Stock Exchange Composite Index. Although the Dow Jones Industrial Average is a popular index, it would be inappropriate for calculating the equity risk premium because it is too narrow.

We use the total return of our large company stock index (currently represented by the S&P 500) as our market benchmark when calculating the equity risk premium. The S&P 500 was selected as the appropriate market benchmark because it is representative of a large sample of companies across a large number of industries. As of December 31, 1993, 88 separate industry groups were included in the index, and the industry composition of the index has not changed since. The S&P 500 is also one of

the most widely accepted market benchmarks. In short, the S&P 500 is a good measure of the equity market as a whole. Table 5-1 illustrates the equity risk premium calculation using several different market indices and the income return on three government bonds of different horizons.

Table 5-1: Equity Risk Premium with Different Market Indices

	Equity Risk Premia		
	Long-Horizon (%)	Intermediate-Horizon (%)	Short-Horizon (%)
S&P 500	6.72	7.22	8.22
Total Value-Weighted NYSE	6.52	7.03	8.02
NYSE Deciles 1–2	5.99	6.50	7.49

Data from 1926–2010.

The equity risk premium is calculated by subtracting the arithmetic mean of the government bond income return from the arithmetic mean of the stock market total return. Table 5-2 demonstrates this calculation for the long-horizon equity risk premium.

Table 5-2: Long-Horizon Equity Risk Premium Calculation

	Arithmetic Mean				
Long-Horizon	Market Total Return (%)		Risk-Free Rate (%)		Equity Risk Premium (%)
S&P 500	11.88	–	5.17	=	6.72*
Total Value-Weighted NYSE	11.69	–	5.17	=	6.52
NYSE Deciles 1–2	11.15	–	5.17	=	5.99*

Data from 1926–2010. *difference due to rounding.

Data for the New York Stock Exchange is obtained from Morningstar and the Center for Research in Security Prices (CRSP) at the University of Chicago's Graduate School of Business. The "Total" series is a capitalization-weighted index and includes all stocks traded on the New York Stock Exchange except closed-end mutual funds, real estate investment trusts, foreign stocks, and Americus Trusts. Capitalization-weighted means that the weight of each stock in the index, for a given month, is proportionate to its market capitalization (price times number of shares outstanding) at the beginning of that month. The "Decile 1–2" series includes all stocks with capitalizations that rank within the upper 20 percent of companies traded on the New York Stock Exchange, and it is therefore a large-capitalization index. For more information on the Center for Research in Security Pricing data methodology, see Chapter 7.

The resulting equity risk premia vary somewhat depending on the market index chosen. It is expected that using the "Total" series will result in a higher equity risk premium than using the "Decile 1–2" series, since the "Decile 1–2" series is a large-capitalization series. As of September 30, 2010, deciles 1–2 of the New York Stock Exchange contained the largest 274 companies traded on the exchange. The "Total" series includes smaller companies that have had historically higher returns, resulting in a higher equity risk premium.

The higher equity risk premium arrived at by using the S&P 500 as a market benchmark is more difficult to explain. One possible explanation is that the S&P 500 is not restricted to the largest 500 companies; other considerations such as industry composition are taken into account when determining if a company should be included in the index. Some smaller stocks are thus included, which may result in the higher equity risk premium of the index. Another possible explanation would be what is termed the "S&P inclusion effect." It is thought that simply being included among the stocks listed on the S&P 500 augments a company's returns. This is due to the large quantity of institutional funds that flow into companies that are listed in the index.

Comparing the S&P 500 total returns to those of another large-capitalization stock index may help evaluate the potential impact of the "S&P inclusion effect." Prior to March 1957, the S&P index that is used throughout this publication consisted of 90 of the largest stocks. The index composition was then changed to include 500 large-capitalization stocks that, as stated earlier, are not necessarily the 500 largest. Deciles 1–2 of the NYSE contained just over 200 of the largest companies, ranked by market capitalization, in March of 1957. The number of companies included in the deciles of the NYSE fluctuates from quarter to quarter, and by September of 2010, deciles 1–2 contained 274 companies. Though one cannot draw a causal relationship between the change in construction and the correlation of these two indices, this analysis does indicate that the "S&P inclusion effect" does not appear to be very significant in recent periods.

Another possible explanation could be differences in how survivorship is treated when calculating returns. The Center for Research in Security Prices includes the return for a company in the average decile return for the period following the company's removal from the decile,

whether caused by a shift to a different decile portfolio, bankruptcy, or other such reason. On the other hand, the S&P 500 does not make this adjustment. Once a company is no longer included among the S&P 500, its return is dropped from the index. However, this effect may be lessened by the advance announcement of companies being dropped from or added to the S&P 500. In many instances throughout this publication we will present equity risk premia using both the S&P 500 and the NYSE "Deciles 1–2" portfolio to provide a comparison between these large-capitalization benchmarks.

The Market Benchmark and Firm Size

Although not restricted to include only the 500 largest companies, the S&P 500 is considered a large company index. The returns of the S&P 500 are capitalization weighted, which means that the weight of each stock in the index, for a given month, is proportionate to its market capitalization (price times number of shares outstanding) at the beginning of that month. The larger companies in the index therefore receive the majority of the weight. The use of the NYSE "Deciles 1–2" series results in an even purer large company index. Yet many valuation professionals are faced with valuing small companies, which historically have had different risk and return characteristics than large companies. If using a large stock index to calculate the equity risk premium, an adjustment is usually needed to account for the different risk and return characteristics of small stocks. This will be discussed further in Chapter 7 on the size premium.

The Risk-Free Asset

The equity risk premium can be calculated for a variety of time horizons when given the choice of risk-free asset to be used in the calculation. The *2011 Ibbotson® Stocks, Bonds, Bills, and Inflation® Classic Yearbook* provides equity risk premia calculations for short-, intermediate-, and long-term horizons. The short-, intermediate-, and long-horizon equity risk premia are calculated using the income return from a 30-day Treasury bill, a 5-year Treasury bond, and a 20-year Treasury bond, respectively.

Although the equity risk premia of several horizons are available, the long-horizon equity risk premium is preferable for use in most business-valuation settings, even if an investor has a shorter time horizon. Companies are entities that generally have no defined life span; when determining a company's value, it is important to use a long-term discount rate because the life of the company is assumed to be infinite. For this reason, it is appropriate in most cases to use the long-horizon equity risk premium for business valuation.

20-Year versus 30-Year Treasuries

Our methodology for estimating the long-horizon equity risk premium makes use of the income return on a 20-year Treasury bond; however, the Treasury currently does not issue a 20-year bond. The 30-year bond that the Treasury recently began issuing again is theoretically more correct due to the long-term nature of business valuation, yet Ibbotson Associates instead creates a series of returns using bonds on the market with approximately 20 years to maturity. The reason for the use of a 20-year maturity bond is that 30-year Treasury securities have only been issued over the relatively recent past, starting in February of 1977, and were not issued at all through the early 2000s.

The same reason exists for why we do not use the 10-year Treasury bond—a long history of market data is not available for 10-year bonds. We have persisted in using a 20-year bond to keep the basis of the time series consistent.

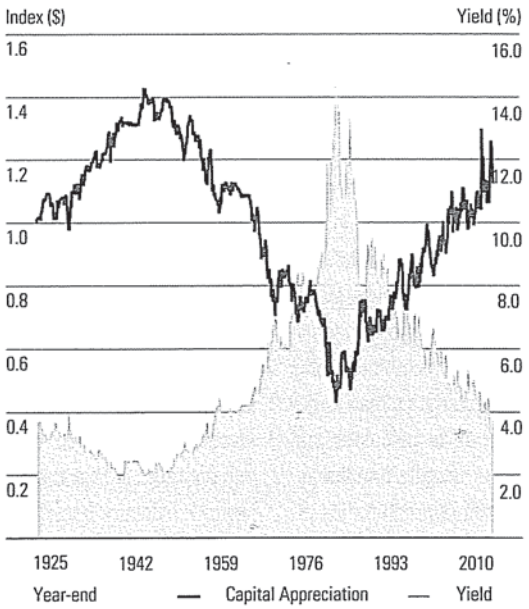
Income Return

Another point to keep in mind when calculating the equity risk premium is that the income return on the appropriate-horizon Treasury security, rather than the total return, is used in the calculation. The total return is comprised of three return components: the income return, the capital appreciation return, and the reinvestment return. The income return is defined as the portion of the total return that results from a periodic cash flow or, in this case, the bond coupon payment. The capital appreciation return results from the price change of a bond over a specific period. Bond prices generally change in reaction to unexpected fluctuations in yields. Reinvestment return is the return on a given month's investment income when reinvested into the same asset class in the subsequent months of the year. The income return is thus used in the estimation of the equity risk premium because it represents the truly riskless portion of the return.[2]

Yields have generally risen on the long-term bond over the 1926–2010 period, so it has experienced negative capital appreciation over much of this time. This trend has turned around since the 1980s, however. Graph 5-1 illustrates the yields on the long-term government bond series

compared to an index of the long-term government bond capital appreciation. In general, as yields rose, the capital appreciation index fell, and vice versa. Had an investor held the long-term bond to maturity, he would have realized the yield on the bond as the total return. However, in a constant maturity portfolio, such as those used to measure bond returns in this publication, bonds are sold before maturity (at a capital loss if the market yield has risen since the time of purchase). This negative return is associated with the risk of unanticipated yield changes.

Graph 5-1: Long-term Government Bond Yields versus Capital Appreciation Index



Data from 1925–2010.

For example, if bond yields rise unexpectedly, investors can receive a higher coupon payment from a newly issued bond than from the purchase of an outstanding bond with the former lower-coupon payment. The outstanding lower-coupon bond will thus fail to attract buyers, and its price will decrease, causing its yield to increase correspondingly, as its coupon payment remains the same. The newly priced outstanding bond will subsequently attract purchasers who will benefit from the shift in price and yield; however, those investors who already held the bond will suffer a capital loss due to the fall in price.

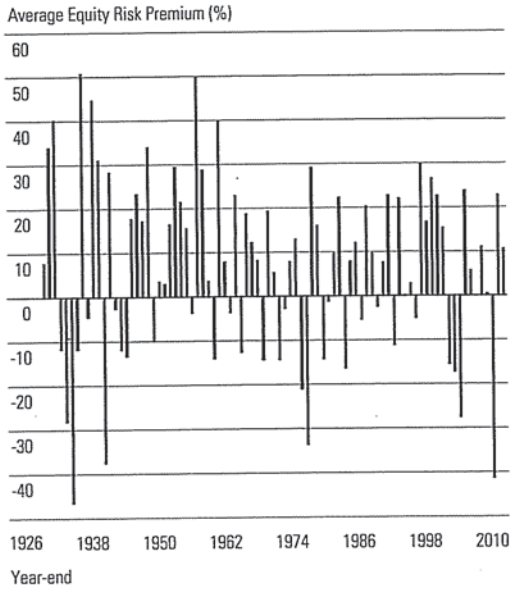
Anticipated changes in yields are assessed by the market and figured into the price of a bond. Future changes in yields that are not anticipated will cause the price of the bond to adjust accordingly. Price changes in bonds due to unanticipated changes in yields introduce price risk into the total return. Therefore, the total return on the bond series does not represent the riskless rate of return.The income return better represents the unbiased estimate of the purely riskless rate of return, since an investor can hold a bond to maturity and be entitled to the income return with no capital loss.

Arithmetic versus Geometric Means

The equity risk premium data presented in this book are arithmetic average risk premia as opposed to geometric average risk premia. The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because both the CAPM and the building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance, since it represents the compound average return.

The argument for using the arithmetic average is quite straightforward. In looking at projected cash flows, the equity risk premium that should be employed is the equity risk premium that is expected to actually be incurred over the future time periods. Graph 5-2 shows the realized equity risk premium for each year based on the returns of the S&P 500 and the income return on long-term government bonds. (The actual, observed difference between the return on the stock market and the riskless rate is known as the realized equity risk premium.) There is considerable volatility in the year-by-year statistics. At times the realized equity risk premium is even negative.

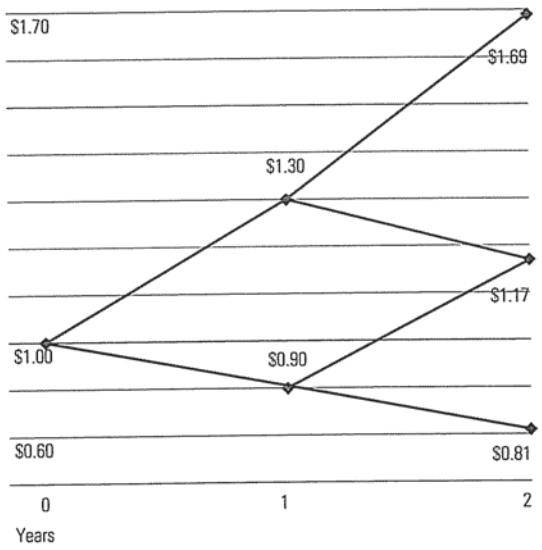
Graph 5-2: Realized Equity Risk Premium Per Year



Data from 1926–2010.

To illustrate how the arithmetic mean is more appropriate than the geometric mean in discounting cash flows, suppose the expected return on a stock is 10 percent per year with a standard deviation of 20 percent. Also assume that only two outcomes are possible each year: +30 percent and –10 percent (i.e., the mean plus or minus one standard deviation). The probability of occurrence for each outcome is equal. The growth of wealth over a two-year period is illustrated in Graph 5-3.

Graph 5-3: Growth of Wealth Example



The most common outcome of $1.17 is given by the geometric mean of 8.2 percent. Compounding the possible outcomes as follows derives the geometric mean:

$$\left[(1+0.30)\times(1-0.10)\right]^{1/2}-1=0.082$$

However, the expected value is predicted by compounding the arithmetic, not the geometric, mean. To illustrate this, we need to look at the probability-weighted average of all possible outcomes:

(0.25 × $1.69)	= $0.4225
+ (0.50 × $1.17)	= $0.5850
+ (0.25 × $0.81)	= $0.2025
Total	$1.2100

Therefore, $1.21 is the probability-weighted expected value. The rate that must be compounded to achieve the terminal value of $1.21 after 2 years is 10 percent, the arithmetic mean:

$$\$1\times(1+0.10)^{2}=\$1.21$$

The geometric mean, when compounded, results in the median of the distribution:

$$\$1\times(1+0.082)^{2}=\$1.17$$

The arithmetic mean equates the expected future value with the present value; it is therefore the appropriate discount rate.

Appropriate Historical Time Period

The equity risk premium can be estimated using any historical time period. For the U.S., market data exists at least as far back as the late 1800s. Therefore, it is possible to estimate the equity risk premium using data that covers roughly the past 100 years.

Our equity risk premium covers the time period from 1926 to the present. The original data source for the time series comprising the equity risk premium is the Center for Research in Security Prices. CRSP chose to begin their analysis of market returns with 1926 for two main reasons. CRSP determined that the time period around 1926 was

approximately when quality financial data became available. They also made a conscious effort to include the period of extreme market volatility from the late twenties and early thirties; 1926 was chosen because it includes one full business cycle of data before the market crash of 1929. These are the most basic reasons why our equity risk premium calculation window starts in 1926.

Implicit in using history to forecast the future is the assumption that investors' expectations for future outcomes conform to past results. This method assumes that the price of taking on risk changes only slowly, if at all, over time. This "future equals the past" assumption is most applicable to a random time-series variable. A time-series variable is random if its value in one period is independent of its value in other periods.

Does the Equity Risk Premium Revert to Its Mean Over Time?

Some have argued that the estimate of the equity risk premium is upwardly biased since the stock market is currently priced high. In other words, since there have been several years with extraordinarily high market returns and realized equity risk premia, the expectation is that returns and realized equity risk premia will be lower in the future, bringing the average back to a normalized level. This argument relies on several studies that have tried to determine whether reversion to the mean exists in stock market prices and the equity risk premium.[3] Several academics contradict each other on this topic; moreover, the evidence supporting this argument is neither conclusive nor compelling enough to make such a strong assumption.

Our own empirical evidence suggests that the yearly difference between the stock market total return and the U.S. Treasury bond income return in any particular year is random. Graph 5-2, presented earlier, illustrates the randomness of the realized equity risk premium.

A statistical measure of the randomness of a return series is its serial correlation. Serial correlation (or autocorrelation) is defined as the degree to which the return of a given series is related from period to period. A serial correlation near positive one indicates that returns are predictable from one period to the next period and are positively related. That is, the returns of one period are a good predictor of the returns in the next period. Conversely, a serial correlation near negative one indicates that the returns in one period are inversely related to those of the next period. A serial correlation near zero indicates that the returns are random or unpredictable from one period to the next. Table 5-3 contains the serial correlation of the market total returns, the realized long-horizon equity risk premium, and inflation.

Table 5-3: Interpretation of Annual Serial Correlations

Series	Serial Correlation	Interpretation
Large Company Stock Total Returns	0.02	Random
Equity Risk Premium	0.02	Random
Inflation Rates	0.64	Trend

Data from 1926–2010.

The significance of this evidence is that the realized equity risk premium next year will not be dependent on the realized equity risk premium from this year. That is, there is no discernable pattern in the realized equity risk premium—it is virtually impossible to forecast next year's realized risk premium based on the premium of the previous year. For example, if this year's difference between the riskless rate and the return on the stock market is higher than last year's, that does not imply that next year's will be higher than this year's. It is as likely to be higher as it is lower. The best estimate of the expected value of a variable that has behaved randomly in the past is the average (or arithmetic mean) of its past values.

Table 5-4 also indicates that the equity risk premium varies considerably by decade. The complete decades ranged from a high of 17.9 percent in the 1950s to a low of -3.7 percent in the 2000s. This look at historical equity risk premium reveals no observable pattern.

Table 5-4: Long-Horizon Equity Risk Premium by Decade (%)

1920s*	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2001-2010
17.6	2.3	8.0	17.9	4.2	0.3	7.9	12.1	-3.7	-1.1

Data from 1926–2010.
*Based on the period 1926–1929.

Finnerty and Leistikow perform more econometrically sophisticated tests of mean reversion in the equity risk premium. Their tests demonstrate that—as we suspected from our simpler tests—the equity risk premium that was realized over 1926 to the present was almost perfectly free of mean reversion and had no statistically identifiable time trends.[4] Lo and MacKinlay conclude, "the rejection of the random walk for weekly returns does not support a mean-reverting model of asset prices."

Choosing an Appropriate Historical Period

The estimate of the equity risk premium depends on the length of the data series studied. A proper estimate of the equity risk premium requires a data series long enough to give a reliable average without being unduly influenced by very good and very poor short-term returns. When calculated using a long data series, the historical equity risk premium is relatively stable.[5] Furthermore, because an average of the realized equity risk premium is quite volatile when calculated using a short history, using a long series makes it less likely that the analyst can justify any number he or she wants. The magnitude of how shorter periods can affect the result will be explored later in this chapter.

Some analysts estimate the expected equity risk premium using a shorter, more recent time period on the basis that recent events are more likely to be repeated in the near future; furthermore, they believe that the 1920s, 1930s, and 1940s contain too many unusual events. This view is suspect because all periods contain "unusual" events. Some of the most unusual events of the last hundred years took place quite recently, including the inflation of the late 1970s and early 1980s, the October 1987 stock market crash, the collapse of the high-yield bond market, the major contraction and consolidation of the thrift industry, the collapse of the Soviet Union, the development of the European Economic Community, the attacks of September 11, 2001 and the more recent liquidity crisis of 2008 and 2009.

It is even difficult for economists to predict the economic environment of the future. For example, if one were analyzing the stock market in 1987 before the crash, it would be statistically improbable to predict the impending short-term volatility without considering the stock market crash and market volatility of the 1929–1931 period. Without an appreciation of the 1920s and 1930s, no one would believe that such events could happen. The 85-year period starting with 1926 is representative of what can happen: it includes high and low returns, volatile and quiet markets, war and peace, inflation and deflation, and prosperity and depression. Restricting attention to a shorter historical period underestimates the amount of change that could occur in a long future period. Finally, because historical event-types (not specific events) tend to repeat themselves, long-run capital market return studies can reveal a great deal about the future. Investors probably expect "unusual" events to occur from time to time, and their return expectations reflect this.

A Look at the Historical Results

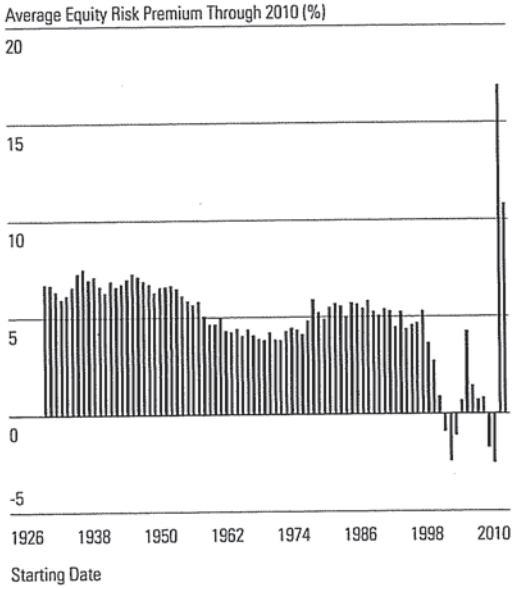
It is interesting to take a look at the realized returns and realized equity risk premium in the context of the above discussion. Table 5-5 shows the average stock market return and the average (arithmetic mean) realized long-horizon equity risk premium over various historical time periods. Similarly, Graph 5-5 shows the average (arithmetic mean) realized equity risk premium calculated through 2010 for different ending dates. The table and the graph both show that using a longer historical period provides a more stable estimate of the equity risk premium. The reason is that any unique period will not be weighted heavily in an average covering a longer historical period. It better represents the probability of these unique events occurring over a long period of time.

Table 5-5: Stock Market Return and Equity Risk Premium Over Time

Length (Yrs.)	Period Dates	Large Company Stock Arithmetic Mean Total Return (%)	Long-Horizon Equity Risk Premium (%)
85	1926–2010	11.8	6.7
70	1941–2010	12.6	7.0
60	1951–2010	12.3	6.1
50	1961–2010	11.2	4.4
40	1971–2010	11.8	4.5
30	1981–2010	12.2	5.0
20	1991–2010	11.0	5.3
15	1996–2010	8.9	3.7
10	2001–2010	3.6	-1.1
5	2006–2010	5.2	0.8

Data from 1926–2010.

Graph 5-4: Equity Risk Premium Using Different Starting Dates



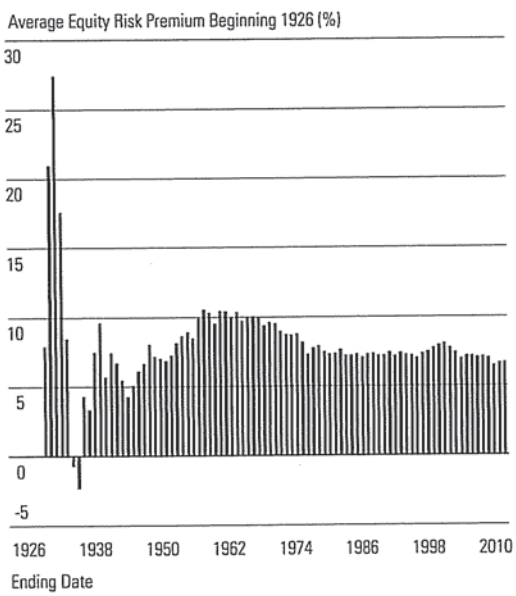
Data from 1926–2010.

Looking carefully at Graph 5-4 will clarify this point. The graph shows the realized equity risk premium for a series of time periods through 2010, starting with 1926. In other words, the first value on the graph represents the average realized equity risk premium over the period 1926–2010. The next value on the graph represents the average realized equity risk premium over the period 1927–2010, and so on, with the last value representing the average over the most recent five years, 2006–2010. Concentrating on the left side of Graph 5-5, one notices that the realized equity risk premium, when measured over long periods of time, is relatively stable. In viewing the graph from left to right, moving from longer to shorter historical periods, one sees that the value of the realized equity risk premium begins to decline significantly. Why does this occur? The reason is that the severe bear market of 1973–1974 is receiving proportionately more weight in the shorter, more recent average. If you continue to follow the line to the right, however, you will also notice that when 1973 and 1974 fall out of the recent average, the realized equity risk premium jumps up by nearly 1.2 percent.

Additionally, use of recent historical periods for estimation purposes can lead to illogical conclusions. As seen in Table 5-5, the bear market in the early 2000's and in 2008 has caused the realized equity risk premium in the shorter historical periods to be lower than the long-term average.

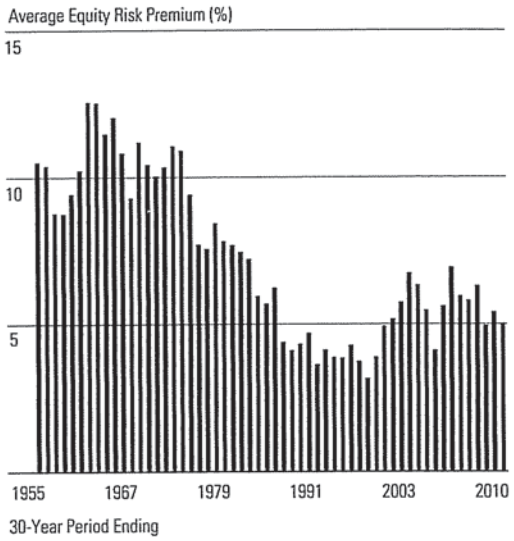
The impact of adding one additional year of data to a historical average is lessened the greater the initial time period of measurement. Short-term averages can be affected considerably by one or more unique observations. On the other hand, long-term averages produce more stable results. A series of graphs looking at the realized equity risk premium will illustrate this effect. Graph 5-5 shows the average (arithmetic mean) realized long-horizon equity risk premium starting in 1926. Each additional point on the graph represents the addition of another year to the average. Although the graph is extremely volatile in the beginning periods, the stability of the long-term average is quite remarkable. Again, the "unique" periods of time will not be weighted heavily in a long-term average, resulting in a more stable estimate.

Graph 5-5: Equity Risk Premium Using Different Ending Dates



Data from 1926–2010.

Graph 5-6: Equity Risk Premium Over 30-Year Periods



Data from 1926–2010.

Some practitioners argue for a shorter historical time period, such as 30 years, as a basis for the equity risk premium estimation. The logic for the use of a shorter period is that historical events and economic scenarios present before this time are unlikely to be repeated. Graph 5-6 shows the equity risk premium measured over 30-year periods, and it appears from the graph that the premium has been trending downwards. The 30-year equity risk premium remained close to 4 percent for several years in the 1980s and 1990s. However, it has fallen and then risen in the most recent 30-year periods.

The key to understanding this result lies again in the years 1973 and 1974. The oil embargo during this period had a tremendous effect on the market. The equity risk premium for these years alone was -21 and -34 percent, respectively. Periods that include the years 1973 and 1974 result in an average equity risk premium as low as 3.1 percent. In the most recent 30-year periods that excludes 1973 and 1974, the average rises to over 6 percent. The 2000s have also had an enormous effect on the equity risk premium.

It is difficult to justify such a large divergence in estimates of return over such a short period of time. This does not suggest, however, that the years 1973 and 1974 should be excluded from any estimate of the equity risk premium; rather, it emphasizes the importance of using a long historical period when measuring the equity risk premium in order to obtain a reliable average that is not overly influenced by short-term returns. The same holds true when analyzing the poor performance of the early 2000s and 2008.

Does the Equity Risk Premium Represent Minority or Controlling Interest?

There is quite a bit of confusion among valuation practitioners regarding the use of publicly traded company data to derive the equity risk premium. Is a minority discount implicit in this data? Recall that the equity risk premium is typically derived from the returns of a market index: the S&P 500, the New York Stock Exchange (NYSE), or the NYSE Deciles 1–2. (The size premia that are covered in Chapter 7 are derived from the returns of companies traded on the NYSE, in addition to those on the NYSE AMEX and NASDAQ). Both the S&P 500 and the NYSE include a preponderance of companies that are minority held. Does this imply that an equity risk premium (or size premium) derived from these data represents a minority interest premium? This is a critical issue that must be addressed by the valuation professional, since applying a minority discount or a control premium can have a material impact on the ultimate value derived in an appraisal.

Since most companies in the S&P 500 and the NYSE are minority held, some assume that the risk premia derived from these return data represent minority returns and therefore have a minority discount implicit within them. However, this assumption is not correct. The returns that are generated by the S&P 500 and the NYSE represent returns to equity holders. While most of these companies are minority held, there is no evidence that higher rates of return could be earned if these companies were suddenly acquired by majority shareholders. The equity risk premium represents expected premiums that holders of securities of a similar nature can expect to achieve on average into the future. There is no distinction between minority owners and controlling owners.

The discount rate is meant to represent the underlying risk of being in a particular industry or line of business. There are instances when a majority shareholder can acquire a company and improve the cash flows generated by that company. However, this does not necessarily have an impact on the general risk level of the cash flows generated by the company.

United Water Rhode Island, Inc.
Indicated Common Equity Cost Rate Through Use
of the Capital Asset Pricing Model
the Proxy Group of Eight Water Companies

Line No.		Proxy Group of Eight Water Companies
1.	Traditional Capital Asset Pricing Model (1)	10.02 %
2.	Empirical Capital Asset Pricing Model (1)	10.50 %
3.	Conclusion	10.26 %

Notes: (1) From page 2 of this Schedule.

United Water Rhode Island, Inc.
Indicated Common Equity Cost Rate Through Use
of the Capital Asset Pricing Model

	1	2	3
	Value Line Adjusted Beta	Company-Specific Risk Premium Based on Market Premium of 7.08% (1)	CAPM Result Including Risk-Free Rate of 4.88% (2)
Traditional Capital Asset Pricing Model (3)			
Proxy Group of Eight Water Companies			
American States Water Co.	0.80	5.66 %	10.54 %
American Water Works Co., Inc.	0.65	4.60	9.48
Aqua America, Inc.	0.65	4.60	9.48
California Water Service Group	0.70	4.96	9.84
Connecticut Water Service, Inc.	0.80	5.66	10.54
Middlesex Water Company	0.75	5.31	10.19
SJW Corporation	0.90	6.37	11.25
York Water Company	0.70	4.96	9.84
Average			10.15 %
Median			10.02 %
Empirical Capital Asset Pricing Model (4)			
Proxy Group of Eight Water Companies			
American States Water Co.	0.80	6.02 %	10.90 %
American Water Works Co., Inc.	0.65	5.22	10.10
Aqua America, Inc.	0.65	5.22	10.10
California Water Service Group	0.70	5.49	10.37
Connecticut Water Service, Inc.	0.80	6.02	10.90
Middlesex Water Company	0.75	5.75	10.63
SJW Corporation	0.90	6.55	11.43
York Water Company	0.70	5.49	10.37
Average			10.60 %
Median			10.50 %

See page 3 for notes.

United Water Rhode Island, Inc.
Development of the Market-Required Rate of Return on Common Equity Using
the Capital Asset Pricing Model for
the Proxy Group of Eight AUS Utility Reports Water Companies
Adjusted to Reflect a Forecasted Risk-Free Rate and Market Return

Notes:

(1) For reasons explained in Ms. Ahern's accompanying direct testimony, from the thirteen weeks ending April 8, 2011, Value Line Summary & Index, a forecasted 3-5 year total annual market return of 12.34% can be derived by averaging the thirteen weeks ended April 8, 2011 forecasted total 3-5 year total appreciation, converting it into an annual market appreciation and adding the Value Line average forecasted annual dividend yield.

The 3-5 year average total market appreciation of 49% produces a four-year average annual return of 10.48% ($(1.49^{.25}) - 1$). When the average annual forecasted dividend yield of 1.86% is added, a total average market return of 12.34% (1.86% + 10.48%) is derived.

The thirteen week forecasted total market return of 12.34% minus the forecasted risk-free rate of 4.88% (developed in Note 2) is 7.46% (12.34% - 4.88%). The Morningstar, Inc. (Ibbotson Associates) calculated market premium of 6.70% for the period 1926-2010 results from a total market return of 11.90% less the average income return on long-term U.S. Government Securities of 5.20% (11.90% - 5.20% = 6.70%). This is then averaged with the 7.46% Value Line market premium resulting in a 7.08% market premium. The 7.08% market premium is then multiplied by the beta in column 1 of page 2 of this Schedule.

(2) The average forecast based upon six quarterly estimates of 30-year Treasury Note yields per the consensus of nearly 50 economists reported in the Blue Chip Financial Forecasts dated April 1, 2011 (see page 7 of Schedule PMA-8). The estimates are detailed below:

	30-Year Treasury Note Yield
Second Quarter 2011	4.60
Third Quarter 2011	4.70
Fourth Quarter 2011	4.90
First Quarter 2012	4.90
Second Quarter 2012	5.00
Third Quarter 2012	5.20
Average	4.88%

(3) The traditional Capital Asset Pricing Model (CAPM) is applied using the following formula:

$R_S = R_F + \beta (R_M - R_F)$

Where R_S = Return rate of common stock
R_F = Risk Free Rate
β = Value Line Adjusted Beta
R_M = Return on the market as a whole

(4) The empirical CAPM is applied using the following formula:

$R_S = R_F + .25 (R_M - R_F) + .75 \beta (R_M - R_F)$

Where R_S = Return rate of common stock
R_F = Risk-Free Rate
β = Value Line Adjusted Beta
R_M = Return on the market as a whole

Source of Information: Value Line Summary & Index
Blue Chip Financial Forecasts, April 1, 2011
Value Line Investment Survey, January 21, 2011
Standard Edition and Small and Mid-Cap Edition
Ibbotson® SBBI® 2011 Valuation Yearbook – Market Results for
Stocks, Bonds, Bills, and Inflation – 1926 – 2010, Morningstar, Inc., 2011 Chicago, IL

United Water Rhode Island, Inc.
Comparable Earnings Analysis
for a Proxy Group of Eighty-Five Non-Utility Companies Comparable to the
Proxy Group of Eight Water Companies(1)

Company Name	VL Adjusted Beta	Unadjusted Beta	Residual Standard Error of the Regression	Standard Deviation of Beta	Rate of Return on Book Common Equity, Net Worth, or Partner's Capital 5-Year Projected (2) 5 Year Projection	Student's T Statistic
Alberto-Culver	0.60	0.38	2.9447	0.0621	13.50 %	(0.4)
ADTRAN, Inc.	0.85	0.74	3.7961	0.0784	14.50	(0.3)
Gallagher (Arthur J.)	0.70	0.54	3.0490	0.0629	15.00	(0.2)
Amgen	0.65	0.43	3.5693	0.0737	14.00	(0.3)
Baxter Intl Inc.	0.65	0.44	2.9358	0.0606	27.00	1.3
Beckman Coulter	0.75	0.58	3.7224	0.0768	12.50	(0.5)
BMC Software	0.85	0.73	3.0229	0.0624	17.50	0.1
Bristol-Myers Squibb	0.75	0.57	3.1127	0.0642	20.00	0.4
Brown & Brown	0.70	0.48	3.1156	0.0643	12.00	(0.6)
CACI Intl	0.75	0.62	3.6203	0.0747	10.50	(0.8)
Cephalon Inc.	0.70	0.50	3.7490	0.0774	13.00	(0.5)
Capitol Fed. Finl	0.65	0.44	3.2656	0.0674	8.50	(1.0)
Coca-Cola Bottling	0.70	0.52	3.8169	0.0788	20.00	0.4
Copart, Inc.	0.85	0.75	3.4338	0.0709	15.50	(0.2)
CenturyLink Inc.	0.70	0.54	2.9791	0.0615	8.50	(1.0)
CVS Caremark Corp.	0.80	0.66	3.0153	0.0622	11.00	(0.7)
Quest Diagnostics	0.70	0.49	2.9741	0.0614	13.50	(0.4)
DaVita Inc.	0.60	0.39	2.9628	0.0612	15.50	(0.2)
EarthLink, Inc.	0.70	0.48	3.7388	0.0772	11.50	(0.7)
Energy Transfer	0.80	0.68	3.0318	0.0626	18.50	0.2
Edwards Lifesciences	0.65	0.40	3.0481	0.0629	19.00	0.3
First Niagara Finl Group	0.85	0.71	3.6176	0.0747	7.00	(1.2)
Forest Labs.	0.80	0.63	3.3086	0.0683	18.50	0.2
Gilead Sciences	0.70	0.47	3.5886	0.0741	36.50 (3)	2.5
G&K Services `A	0.85	0.70	3.7207	0.0768	8.00	(1.1)
Global Payments	0.85	0.71	3.5545	0.0734	19.50	0.4
Gen-Probe	0.80	0.68	3.3369	0.0689	13.50	(0.4)
Haemonetics Corp.	0.60	0.38	3.0326	0.0626	13.00	(0.5)
Hasbro, Inc.	0.75	0.59	3.4132	0.0705	25.00	1.0
Hudson City Bancorp	0.80	0.67	3.1736	0.0655	11.00	(0.7)
Hospira Inc.	0.70	0.52	3.6388	0.0751	22.50	0.7
Heartland Express	0.80	0.69	3.8092	0.0786	22.50	0.7
IAC/InterActiveCorp	0.70	0.47	3.2320	0.0755	4.00	(1.6)
IDEXX Labs.	0.85	0.73	3.4541	0.0713	17.00	0.0
Intuit Inc.	0.85	0.76	3.1536	0.0651	21.00	0.5
Investors Bancorp	0.75	0.55	3.4197	0.0706	7.50	(1.2)
J&J Snack Foods	0.70	0.49	3.4412	0.0710	13.00	(0.5)
Kroger Co.	0.60	0.39	3.0187	0.0623	20.00	0.4
Lancaster Colony	0.75	0.56	3.3353	0.0688	17.50	0.1
Life Technologies	0.80	0.69	3.4701	0.0716	12.50	(0.5)
Lincare Holdings	0.65	0.44	3.5440	0.0732	23.00	0.8
Mattel, Inc.	0.85	0.74	3.8096	0.0786	21.00	0.5
Matthews Intl	0.85	0.72	3.2770	0.0676	14.50	(0.3)
McKesson Corp.	0.75	0.57	3.3442	0.0690	14.00	(0.3)
Mercury General	0.70	0.52	2.9567	0.0610	9.50	(0.9)
Medtronic, Inc.	0.80	0.67	3.5188	0.0726	16.00	(0.1)
Medco Health Solutions	0.70	0.51	3.5319	0.0729	17.50	0.1

United Water Rhode Island, Inc.
Comparable Earnings Analysis
for a Proxy Group of Eighty-Five Non-Utility Companies Comparable to the
Proxy Group of Eight Water Companies(1)

Company Name	VL Adjusted Beta	Unadjusted Beta	Residual Standard Error of the Regression	Standard Deviation of Beta	Rate of Return on Book Common Equity, Net Worth, or Partner's Capital 5-Year Projected (2) 5 Year Projection		Student's T Statistic
Markel Corp.	0.85	0.74	3.4288	0.0708	6.50		(1.3)
Marsh & McLennan	0.75	0.59	2.9981	0.0619	16.00		(0.1)
MAXIMUS Inc.	0.75	0.62	3.4728	0.0717	31.50		1.9
Merck & Co.	0.80	0.64	3.7413	0.0772	19.50		0.4
Microsoft Corp.	0.80	0.68	3.0743	0.0635	32.00		1.9
Annaly Capital Mgmt.	0.70	0.53	3.6919	0.0762	12.50		(0.5)
Northwest Bancshares	0.80	0.62	3.3244	0.0686	7.00		(1.2)
New York Community	0.85	0.71	3.6707	0.0758	11.00		(0.7)
Owens & Minor	0.65	0.46	3.3797	0.0698	12.50		(0.5)
OReilly Automotive	0.80	0.62	3.5701	0.0737	11.50		(0.7)
Plains All Amer. Pipe.	0.85	0.72	3.5302	0.0729	11.00		(0.7)
Peoples United Finl	0.65	0.40	3.0990	0.0640	5.00		(1.5)
Ruddick Corp.	0.60	0.39	3.5204	0.0727	11.50		(0.7)
Rollins, Inc.	0.80	0.65	3.0560	0.0631	35.50	(3)	2.4
Ross Stores	0.80	0.65	3.6058	0.0744	32.00		1.9
Sherwin-Williams	0.70	0.51	3.3866	0.0699	27.00		1.3
Smucker (J.M.)	0.70	0.48	3.0520	0.0630	10.50		(0.8)
Sara Lee Corp.	0.80	0.66	3.2503	0.0671	46.00	(3)	3.7
Suburban Propane	0.75	0.58	2.9470	0.0608	25.00		1.0
Stericycle Inc.	0.65	0.46	3.1729	0.0655	15.00		(0.2)
Safeway Inc.	0.70	0.49	3.1427	0.0649	18.00		0.2
Stryker Corp.	0.80	0.66	3.1615	0.0653	19.50		0.4
Molson Coors Brewing	0.60	0.35	3.5469	0.0732	8.50		(1.0)
Teleflex Inc.	0.80	0.69	3.2786	0.0677	9.50		(0.9)
TJX Companies	0.80	0.65	3.0480	0.0629	41.00	(3)	3.1
Universal Health Sv. `B	0.80	0.69	3.7278	0.0769	13.50		(0.4)
Varian Medical Sys.	0.80	0.67	3.6705	0.0758	24.00		0.9
Walgreen Co.	0.75	0.61	3.2371	0.0668	17.50		0.1
Waters Corp.	0.85	0.73	3.7947	0.0783	22.50		0.7
WD-40 Co.	0.75	0.56	3.4945	0.0721	17.50		0.1
Weis Markets	0.65	0.45	3.0521	0.0630	9.50		(0.9)
W.P. Carey & Co. LLC	0.85	0.75	3.5109	0.0725	15.00		(0.2)
Watson Pharmac.	0.75	0.56	3.1513	0.0650	12.00		(0.6)
Berkley (W.R.)	0.70	0.50	3.0820	0.0636	13.00		(0.5)
West Pharmac. Svcs.	0.80	0.63	3.5242	0.0727	15.00		(0.2)
World Wrestling Ent.	0.80	0.64	3.4439	0.0711	24.00		0.9
Wolverine World Wide	0.85	0.71	3.7234	0.0769	17.00		0.0
Alleghany Corp.	0.80	0.66	3.2303	0.0667	6.50		(1.3)
Average	0.75	0.58	3.3576	0.0694			
Average for the Proxy Group of Eight Water Companies	0.74	0.55	3.3786	(4) 0.0707			
Median (5)					15.00%		
Conservative Median (6)					14.50%		

See Page 3 for notes.

United Water Rhode Island, Inc.
Notes to Accompany the Comparable Earnings Analysis

(1) The criteria for selection of the proxy group of eighty-five non-utility companies was that the non-utility companies be domestic and have a meaningful projected rate of return on book common equity, shareholders' equity, net worth, or partners' capital 2013 – 2015 as reported in Value Line Investment Survey (Standard Edition). The proxy group of eighty-five non-utility companies was selected based upon the proxy group of eight water companies' unadjusted beta range of 0.34 – 0.76 and standard error of the regression range of 2.9334 - 3.8238. These ranges are based upon plus or minus three standard deviations of the unadjusted beta and standard error of the regression as detailed in Ms. Ahern's direct testimony. Plus or minus three standard deviations captures 99.73% of the distribution of unadjusted betas and standard errors of the regression.

(2) 2013 – 2015 / 2014 – 2016.

(3) The Student's T-statistic associated with these returns exceeds 1.96 at the 95% level of confidence. Therefore, they have been excluded, as outliers, to arrive at proper projected returns as fully explained in Ms. Ahern's testimony.

(4) The standard deviation of the group of seven water companies' standard error of the regression is 0.1484. The standard deviation of the standard error of the regression is calculated as follows:

$$\text{Standard Deviation of the Std. Err. of the Regr.} = \frac{\text{Standard Error of the Regression}}{\sqrt{2N}}$$

where: N = number of observations. Since Value Line betas are derived from weekly price change observations over a period of five years, N = 259

$$\text{Thus, } 0.1484 = \frac{3.3786}{\sqrt{518}} = \frac{3.3786}{22.7596}$$

(5) Median five year projected rate of return on book common equity, shareholder's equity, net worth, or partners' capital including returns identified as outliers as outlined in Note (3) above.

(6) Median five year projected rate of return on book common equity, shareholder's equity, net worth, or partners' capital excluding returns identified as outliers as outlined in Note (3) above.

Source of Information: Value Line, Inc., March 15, 2011
Value Line Investment Survey (Standard Edition)

United Water Rhode Island, Inc.
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE/AMEX/NASDAQ

Line No.		1 Market Capitalization on April 4, 2011 (1) (millions)	1 (times larger)	2 Applicable Decile of the NYSE/AMEX/ NASDAQ (2)	3 Applicable Size Premium (3)	4 Spread from Applicable Size Premium for (4)
1.	United Water Rhode Island, Inc.					
a.	Based Upon the Proxy Group of Eight Water Companies	$ 10.206		10	6.36%	
2.	Proxy Group of Eight Water Companies	$ 1,346.118	131.9	6 - 7	1.85%	4.51%

	(A) Decile	(B) Smallest Company (millions)	(C) Largest Company (millions)	(D) Midpoint (millions)	(E) Size Premium (Return in Excess of CAPM) (2)
Largest	1	$ 15,273.943	$ 314,622.574	$ 164,948.259	-0.38%
	2	6,895.258	15,079.529	10,987.394	0.81%
	3	3,714.445	6,793.876	5,254.161	1.01%
	4	2,512.137	3,710.985	3,111.561	1.20%
	5	1,778.756	2,509.152	2,143.954	1.81%
	6	1,214.679	1,775.966	1,495.323	1.82%
	7	772.795	1,212.290	992.543	1.88%
	8	478.102	771.789	624.946	2.65%
	9	235.725	477.539	356.632	2.94%
Smallest	10	1.222	235.647	118.435	6.36%

*From 2011 Ibbotson risk Premia Over Time Report

Notes:

(1) From Page 3 of this Schedule.

(2) Gleaned from Column (D) on the bottom of this page. The appropriate decile (Column (A)) corresponds to the market capitalization of the proxy group, which is found in Column 1.

(3) Corresponding risk premium to the decile is provided on Column (E) on the bottom of this page.

(4) Line No. 1a Column 3 – Line No. 2 Column 3 and Line No. 1b, Column 3 – Line No. 3 of Column 3 etc.. For example, the 4.51% in Column 4, Line No. 2 is derived as follows 4.51% = 6.36% - 1.85%.

United Water Rhode Island, Inc.
Market Capitalization of United Water Rhode Island, Inc. and
the Proxy Group of Eight Water Companies

		1	2	3	4	5	6
Company	Exchange	Common Stock Shares Outstanding at Fiscal Year End 2010 (millions)	Book Value per Share at Fiscal Year End 2010 (1)	Total Common Equity at Fiscal Year End 2010 (millions)	Closing Stock Market Price on April 01, 2011	Market-to-Book Ratio on April 01, 2011 (2)	Market Capitalization on April 01, 2011 (3) (millions)
United Water Rhode Island, Inc.		NA	NA	$ 5.346 (4)	NA		
Based Upon the Proxy Group of Eight Water Companies						190.9 % (5)	$ 10.206 (6)
Proxy Group of Eight Water Companies							
American States Water Co.		18.631	$ 20.264	$ 377.541	$ 35.950	177.4 %	$ 669.779
American Water Works Co., Inc.		174.996	$ 23.614	$ 4,132.272	$ 28.310	119.9	$ 4,954.137
Aqua America, Inc.		138.449	$ 8.481	$ 1,174.254	$ 23.080	272.1	$ 3,195.404
California Water Service Group		20.833	$ 20.906	$ 435.526	$ 37.370	178.8	$ 778.529
Connecticut Water Service, Inc.		8.677	$ 13.134	$ 113.963	$ 26.430	201.2	$ 229.329
Middlesex Water Company		15.566	$ 11.132	$ 173.279	$ 18.770	168.6	$ 292.174
SJW Corporation		18.552	$ 13.747	$ 255.032	$ 23.200	168.8	$ 430.396
York Water Company		12.692	$ 7.190	$ 91.257	$ 17.270	240.2	$ 219.192
Average		51.049	$ 14.809	$ 844.141	$ 26.298	190.9 %	$ 1,346.118

NA= Not Available

Notes:
(1) Column 3 / Column 1.
(2) Column 4 / Column 2.
(3) Column 5 * Column 3.
(4) Allocation of total capitalization of United Water Rhode Island at 12/31/2010 of $10.228 million by the requested common equity ratio of 52.27% ($10.228 M x 52.27% = $5.346 M).
(5) The market-to-book ratio of United Water Rhode Island, Inc. on April 01, 2011 is assumed to be equal to the market-to-book ratio of the Proxy Group of Eight Water Companies at April 01, 2011.
(6) United Water Rhode Island, Inc.'s common stock, if traded, would trade at a market-to-book ratio equal to the average market-to-book ratio at April 01, 2011 of the Proxy Group of Eight Water Companies, 190.9%, and United Water Rhode Island, Inc.'s market capitalization on April 01, 2011 would therefore have been $10.206 million.

Source of Information: 2010 Annual Forms 10K
yahoo.finance.com
Company Provided

Ibbotson® SBBI®

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Market Results for
Stocks, Bonds, Bills, and Inflation
1926–2010

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Chapter 7

Firm Size and Return

The Firm Size Phenomenon

One of the most remarkable discoveries of modern finance is that of a relationship between firm size and return. The relationship cuts across the entire size spectrum but is most evident among smaller companies, which have higher returns on average than larger ones. Many studies have looked at the effect of firm size on return.[1] In this chapter, the returns across the entire range of firm size are examined.

Size and Liquidity

Capitalization is not necessarily the underlying cause of the higher returns for smaller companies. While smaller companies are usually less liquid, with fewer shares traded on any given day, not all companies of the same size have the same liquidity. Stocks that are more liquid have higher valuations for the same cash flows because they have a lower cost of capital and commensurately lower returns on average. Stocks that are less liquid have a higher cost of capital and higher returns on average.[2]

While it would be very useful to estimate the equity cost of capital of companies that are not publicly traded, there is not a direct measure of liquidity for these companies because there are no public trades. Thus, there is usually no share turnover, no bid/ask spreads, etc. in which to measure liquidity. Even though liquidity is not directly observable, capitalization is; thus the size premium can serve as a partial measure of the increased cost of capital of a less liquid stock.

Size premiums presented in this book are measured from publicly traded companies of various sizes and therefore do not represent the full cost of capital for non-traded companies. The valuation for a non-publicly traded company should also reflect a discount for the very fact that it is not traded. This would be an liquidity discount and could be applied to the valuation directly, or alternatively reflected as an liquidity premium in the cost of capital.

This chapter does not tell you how to estimate this incremental liquidity valuation discount (or cost of capital liquidity premium) that is not covered by the size premium. At the end of this chapter, we show some empirical results on the impact of liquidity on stock returns.

Construction of the Decile Portfolios

The portfolios used in this chapter are those created by the Center for Research in Security Prices (CRSP) at the University of Chicago's Graduate School of Business. CRSP has refined the methodology of creating size-based portfolios and has applied this methodology to the entire universe of NYSE/AMEX/NASDAQ-listed securities going back to 1926.

The New York Stock Exchange universe excludes closed-end mutual funds, preferred stocks, real estate investment trusts, foreign stocks, American Depository Receipts, unit investment trusts, and Americus Trusts. All companies on the NYSE are ranked by the combined market capitalization of their eligible equity securities. The companies are then split into 10 equally populated groups, or deciles. Eligible companies traded on the NYSE, the NYSE Amex Equities (AMEX), and the Nasdaq National Market (NASDAQ) are then assigned to the appropriate deciles according to their capitalization in relation to the NYSE breakpoints. The portfolios are rebalanced, using closing prices for the last trading day of March, June, September, and December. Securities added during the quarter are assigned to the appropriate portfolio when two consecutive month-end prices are available. If the final NYSE price of a security that becomes delisted is a month-end price, then that month's return is included in the quarterly return of the security's portfolio. When a month-end NYSE price is missing, the month-end value of the security is derived from merger terms, quotations on regional exchanges, and other sources. If a month-end value still is not determined, the last available daily price is used.

In October 2008, NYSE Euronext acquired the American Stock Exchange (AMEX) and rebranded the index as NYSE Amex Equities. To ease confusion, we will continue to refer to this index as AMEX through out this chapter.

Table 7-1: Size-Decile Portfolios of the NYSE/AMEX/NASDAQ
Number of Companies, Historical and Recent Market Capitalization

Decile	Historical Average Percentage of Total Capitalization	Recent Number of Companies	Recent Decile Market Capitalization (in Thousands)	Recent Percentage of Total Capitalization
1-Largest	63.26%	168	8,586,385,656	62.30%
2	13.94	181	1,873,378,709	13.59
3	7.53	187	1,022,604,243	7.42
4	4.71	185	594,702,185	4.32
5	3.24	213	482,327,242	3.50
6	2.39	230	360,140,550	2.61
7	1.76	287	304,948,414	2.21
8	1.31	361	239,018,595	1.73
9	1.03	491	181,744,805	1.32
10-Smallest	0.83	1,320	136,119,075	0.99
Mid-Cap 3-5	15.48	585	2,099,633,670	15.24
Low-Cap 6-8	5.46	878	904,107,559	6.56
Micro-Cap 9-10	1.86	1,811	317,863,880	2.31

Data from 1926–2010. Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2011 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission.

Historical average percentage of total capitalization shows the average, over the last 85 years, of the decile market values as a percentage of the total NYSE/AMEX/NASDAQ calculated each month. Number of companies in deciles, recent market capitalization of deciles and recent percentage of total capitalization are as of September 30, 2010.

Table 7-2: Size-Decile Portfolios of the NYSE/AMEX/NASDAQ,
Largest Company and Its Market Capitalization by Decile

Decile	Recent Market Capitalization (in Thousands)	Company Name
1-Largest	$314,622,574	Exxon Mobil Corp.
2	15,079,529	H.J. Heinz Co.
3	6,793,876	Ameren Corp.
4	3,710,985	Timken Co.
5	2,509,152	Compass Minerals Intl Inc.
6	1,775,966	Trinity Industries Inc.
7	1,212,290	Delphi Financial Group
8	771,789	RSC Holdings Inc.
9	477,539	DSW Inc.
10-Smallest	235,647	McClatchy Co.

Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2011 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission. Market capitalization and name of largest company in each decile as of September 30, 2010.

Base security returns are monthly holding period returns. All distributions are added to the month-end prices, and appropriate price adjustments are made to account for stock splits and dividends. The return on a portfolio for one month is calculated as the weighted average of the returns for its individual stocks. Annual portfolio returns are calculated by compounding the monthly portfolio returns.

Size of the Deciles

Table 7-1 reveals that the top three deciles of the NYSE/AMEX/NASDAQ account for most of the total market value of its stocks. Nearly two-thirds of the market value is represented by the first decile, which currently consists of 165 stocks, while the smallest decile accounts for just over one percent of the market value. The data in the second column of Table 7-1 are averages across all 85 years. Of course, the proportion of market value represented by the various deciles varies from year to year.

Columns three and four give recent figures on the number of companies and their market capitalization, presenting a snapshot of the structure of the deciles as of September 30, 2010.

Table 7-2 gives the current breakpoints that define the composition of the NYSE/AMEX/NASDAQ size deciles. The largest company and its market capitalization are presented for each decile. Table 7-3 shows the historical breakpoints for each of the three size groupings presented throughout this chapter. Mid-cap stocks are defined here as the aggregate of deciles 3–5. Based on the most recent data (Table 7-2), companies within this mid-cap range have market capitalizations at or below $6,793,876,000 but greater than $1,775,966,000. Low-cap stocks include deciles 6–8 and currently include all companies in the NYSE/AMEX/NASDAQ with market capitalizations at or below $1,775,966,000 but greater than $477,539,000. Micro-cap stocks include deciles 9–10 and include companies with market capitalizations at or below $477,539,000. The market capitalization of the smallest company included in the micro-capitalization group is currently $1,222,000.

Presentation of the Decile Data

Summary statistics of annual returns of the 10 deciles over 1926–2010 are presented in Table 7-4. Note from this exhibit that both the average return and the total risk, or standard deviation of annual returns, tend to increase as one moves from the largest decile to the smallest. Furthermore, the serial correlations of returns are near zero for all but the smallest deciles. Serial correlations and their significance will be discussed in detail later in this chapter.

Table 7-3
Size-Decile Portfolios of the NYSE/AMEX/NASDAQ:
Largest and Smallest Company by Size Group (Continued)

1926–1965

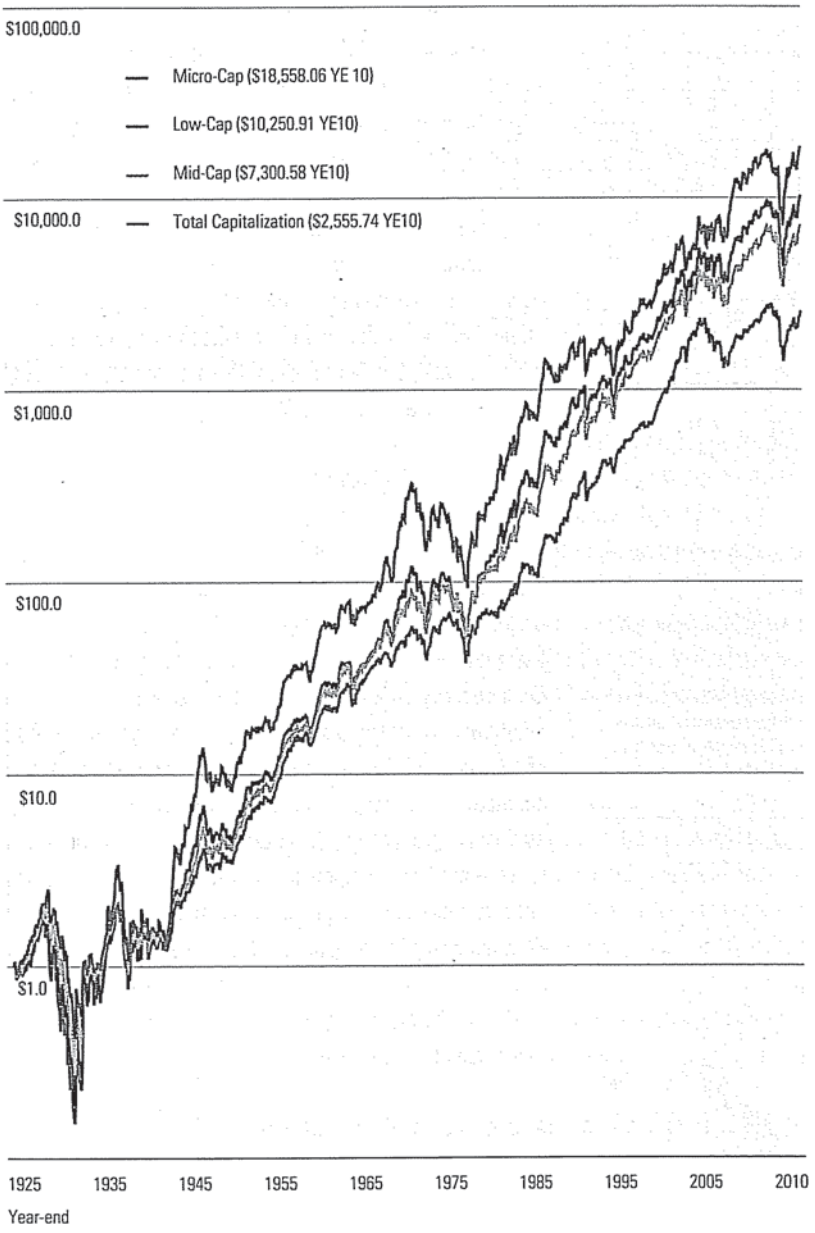
Date	Capitalization of Largest Company (in Thousands)			Capitalization of Smallest Company (in Thousands)		
	Mid-Cap	Low-Cap	Micro-Cap	Mid-Cap	Low-Cap	Micro-Cap
(Sept 30)	3–5	6–8	9–10	3–5	6–8	9–10
1926	$62,865	$14,128	$4,188	$14,363	$4,200	$31
1927	74,498	16,200	4,560	16,250	4,613	41
1928	89,494	21,350	5,976	21,500	6,028	82
1929	109,463	23,194	5,749	23,386	5,769	70
1930	59,033	11,550	2,413	11,557	2,422	24
1931	27,750	5,171	1,079	5,250	1,088	10
1932	26,240	4,175	1,006	4,187	1,013	49
1933	36,313	6,192	1,499	6,208	1,515	88
1934	32,663	5,813	1,440	5,875	1,443	63
1935	41,652	8,247	1,875	8,249	1,888	47
1936	53,606	12,917	3,294	13,031	3,325	90
1937	42,384	10,888	2,928	10,896	2,933	83
1938	40,140	8,574	2,213	8,660	2,235	53
1939	40,533	9,836	2,721	9,862	2,749	100
1940	32,813	8,832	2,100	8,867	2,112	93
1941	33,333	8,800	2,396	8,813	2,431	82
1942	28,091	7,308	2,040	7,372	2,052	145
1943	43,425	11,060	3,652	11,100	3,718	291
1944	45,659	13,466	4,820	13,500	4,875	328
1945	58,029	18,910	7,205	18,947	7,228	642
1946	59,575	18,070	7,080	18,075	7,132	613
1947	61,443	18,464	6,689	18,506	6,711	630
1948	58,468	17,216	6,281	17,224	6,297	665
1949	61,264	16,503	5,668	16,564	5,670	455
1950	72,628	20,904	7,326	21,021	7,363	605
1951	92,894	25,493	8,438	25,549	8,441	699
1952	94,051	25,114	8,366	25,118	8,428	480
1953	92,790	23,808	7,650	23,836	7,688	355
1954	134,699	31,612	9,328	31,625	9,444	509
1955	162,221	42,120	12,215	42,485	12,276	600
1956	178,589	45,750	13,283	45,765	13,298	601
1957	170,079	42,234	12,552	42,470	12,650	601
1958	219,269	52,572	15,513	52,601	15,561	800
1959	243,709	61,458	19,200	61,620	19,278	1,768
1960	240,600	58,590	18,340	58,591	18,480	775
1961	308,900	74,919	22,762	75,082	22,770	2,160
1962	252,500	60,771	19,327	61,053	19,346	236
1963	310,626	74,531	24,827	74,556	24,852	158
1964	358,730	81,950	27,931	82,429	28,092	278
1965	411,397	91,550	31,533	92,442	31,650	339

Table 7-3 (Continued)
Size-Decile Portfolios of the NYSE/AMEX/NASDAQ:
Largest and Smallest Company by Size Group (Continued)

1966–2010

Date	Capitalization of Largest Company (in Thousands)			Capitalization of Smallest Company (in Thousands)		
	Mid-Cap	Low-Cap	Micro-Cap	Mid-Cap	Low-Cap	Micro-Cap
(Sept 30)	3–5	6–8	9–10	3–5	6–8	9–10
1966	355,976	86,301	29,616	86,309	29,628	162
1967	494,221	132,178	48,139	132,271	48,182	519
1968	545,337	156,776	62,725	156,914	62,920	2,661
1969	496,371	141,542	48,785	142,010	48,840	1,384
1970	452,155	115,353	37,038	116,246	37,071	1,216
1971	540,926	140,357	44,888	140,397	44,907	908
1972	550,011	140,676	41,938	140,711	41,958	996
1973	507,165	116,042	33,930	116,087	33,941	593
1974	278,010	61,009	18,020	61,379	18,032	244
1975	413,863	90,766	25,638	90,787	25,692	468
1976	554,693	120,260	34,541	120,379	34,542	362
1977	567,353	138,534	39,245	138,707	39,398	617
1978	626,508	180,503	52,850	181,148	52,875	1,071
1979	722,753	196,852	56,404	197,312	56,420	798
1980	843,224	232,001	60,516	232,504	60,550	1,197
1981	848,189	221,008	58,385	223,672	58,451	1,248
1982	857,822	229,809	60,007	230,450	60,138	943
1983	1,223,644	360,242	99,038	360,591	99,444	1,689
1984	1,192,530	340,262	91,162	340,950	91,492	1,935
1985	1,328,504	341,504	90,773	342,770	91,018	750
1986	1,757,617	394,738	96,391	395,134	96,480	656
1987	2,145,644	499,940	116,458	500,270	116,553	811
1988	1,928,870	432,006	96,064	434,359	96,086	308
1989	2,332,567	515,156	103,620	517,276	104,005	391
1990	1,809,083	360,000	71,792	360,715	71,825	199
1991	2,321,976	492,945	90,285	493,636	90,317	166
1992	2,471,131	512,510	102,376	513,251	102,969	325
1993	2,835,393	614,015	147,083	619,625	147,276	559
1994	2,630,763	633,433	151,759	633,578	151,814	817
1995	2,999,061	690,600	168,873	692,893	168,877	749
1996	3,222,158	747,859	192,659	748,150	192,788	1,405
1997	3,936,936	942,616	260,119	944,497	260,269	1,650
1998	3,537,903	723,517	192,465	724,133	192,864	515
1999	3,715,994	801,711	201,787	803,529	201,817	1,123
2000	4,592,543	922,582	189,370	922,800	189,474	1,287
2001	4,169,705	913,122	211,085	913,428	211,101	418
2002	3,998,995	926,123	242,171	926,647	242,226	269
2003	5,180,303	1,241,508	365,091	1,243,618	365,772	1,563
2004	6,320,713	1,558,386	512,655	1,560,109	512,954	1,293
2005	7,590,867	1,806,555	593,522	1,810,905	593,581	1,611
2006	7,913,370	1,985,969	639,397	1,988,656	639,915	1,746
2007	8,677,165	2,292,931	631,865	2,293,645	631,888	1,422
2008	5,840,629	1,680,752	442,559	1,688,943	442,596	1,462
2009	5,936,147	1,600,169	431,256	1,602,429	432,175	1,007
2010	6,793,876	1,775,966	477,539	1,778,756	478,102	1,222

Graph 7-1: Size-Decile Portfolios of the NYSE/AMEX/NASDAQ
Wealth Indices of Investments in Mid-, Low-, Micro-, and Total Capitalization Stocks
Index (Year-End 1925 = $1.00)



Data from 1925–2010.

Graph 7-1 depicts the growth of one dollar invested in each of three NYSE/AMEX/NASDAQ groups broken down into mid-cap, low-cap, and micro-cap stocks. The index value of the entire NYSE/AMEX/NASDAQ is also included. All returns presented are value-weighted based on the market capitalizations of the deciles contained in each subgroup. The sheer magnitude of the size effect in some years is noteworthy. While the largest stocks actually declined 9 percent in 1977, the smallest stocks rose more than 20 percent. A more extreme case occurred in the depression-recovery year of 1933, when the difference between the first and tenth decile returns was far more substantial, with the largest stocks rising 46 percent, and the smallest stocks rising 218 percent. This divergence in the performance of small and large company stocks is a common occurrence.

Table 7-4: Size-Decile Portfolios of the NYSE/AMEX/NASDAQ
Summary Statistics of Annual Returns

Decile	Geometric Mean	Arithmetic Mean	Standard Deviation	Serial Correlation
1-Largest	9.1	10.9	19.3	0.07
2	10.5	12.9	22.3	0.01
3	10.9	13.6	23.8	-0.03
4	10.8	13.9	26.0	-0.02
5	11.4	14.8	26.8	-0.03
6	11.4	15.0	27.5	0.02
7	11.4	15.4	29.7	0.01
8	11.6	16.5	34.3	0.05
9	11.7	17.2	36.5	0.04
10-Smallest	13.3	21.0	44.9	0.14
Mid Cap	11.0	13.9	24.9	-0.03
Low Cap	11.5	15.4	29.3	0.02
Micro	12.3	18.4	39.0	0.07
NYSE/AMEX/ NASDAQ Total Value Weighted Index	9.7	11.7	20.4	0.02

Data from 1926–2010. Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2011 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission.

Results are for quarterly re-ranking for the deciles. The small company stock summary statistics presented in earlier chapters comprise a re-ranking of the portfolios every five years prior to 1982.

Aspects of the Firm Size Effect

The firm size phenomenon is remarkable in several ways. First, the greater risk of small stocks does not, in the context of the capital asset pricing model (CAPM), fully account for their higher returns over the long term. In the CAPM only systematic, or beta risk, is rewarded; small company stocks have had returns in excess of those implied by their betas.

Second, the calendar annual return differences between small and large companies are serially correlated. This suggests that past annual returns may be of some value in predicting future annual returns. Such serial correlation, or autocorrelation, is practically unknown in the market for large stocks and in most other equity markets but is evident in the size premia.

Table 7-5: Size-Decile Portfolios of the NYSE/AMEX/NASDAQ Long-Term Returns in Excess of CAPM

Decile	Beta*	Arith-metic Mean Return (%)	Actual Return in Excess of Riskless Rate** (%)	CAPM Return in Excess of Riskless Rate† (%)	Size Premium (Return in Excess of CAPM) (%)
1-Largest	0.91	10.92	5.76	6.14	-0.38
2	1.03	12.92	7.76	6.95	0.81
3	1.10	13.56	8.39	7.39	1.01
4	1.12	13.91	8.75	7.55	1.20
5	1.16	14.75	9.59	7.77	1.81
6	1.19	14.95	9.78	7.96	1.82
7	1.24	15.38	10.21	8.34	1.88
8	1.30	16.54	11.37	8.73	2.65
9	1.35	17.16	11.99	9.05	2.94
10-Smallest	1.41	20.97	15.81	9.45	6.36
Mid-Cap, 3-5	1.12	13.87	8.71	7.51	1.20
Low-Cap, 6-8	1.23	15.38	10.22	8.24	1.98
Micro-Cap, 9-10	1.36	18.37	13.20	9.12	4.07

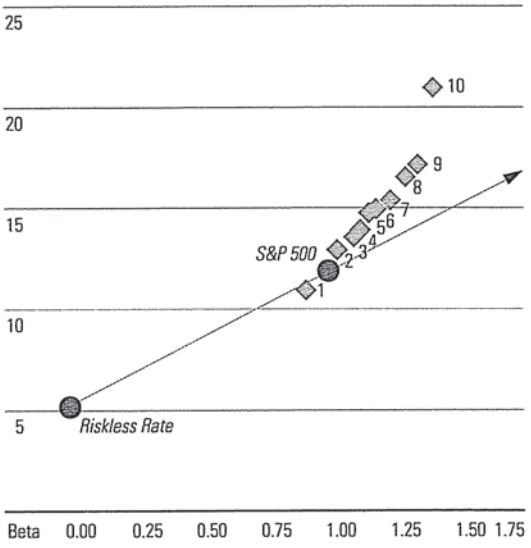
Data from 1926–2010.

*Betas are estimated from monthly returns in excess of the 30-day U.S. Treasury bill total return, January 1926–December 2010.

**Historical riskless rate measured by the 85-year arithmetic mean income return component of 20-year government bonds (5.17).

†Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the S&P 500 (11.88 percent) minus the arithmetic mean income return component of 20-year government bonds (5.17 percent) from 1926–2010.

Graph 7-2: Security Market Line Versus Size-Decile Portfolios of the NYSE/AMEX/NASDAQ



Data from 1926–2010.

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Third, the firm size effect is seasonal. For example, small company stocks outperformed large company stocks in the month of January in a large majority of the years. Such predictability is surprising and suspicious in light of modern capital market theory. These three aspects of the firm size effect—long-term returns in excess of systematic risk, serial correlation, and seasonality—will be analyzed thoroughly in the following sections.

Long-Term Returns in Excess of Systematic Risk

The capital asset pricing model (CAPM) does not fully account for the higher returns of small company stocks. Table 7-5 shows the returns in excess of systematic risk over the past 85 years for each decile of the NYSE/AMEX/NASDAQ. Recall that the CAPM is expressed as follows:

$$k_s = r_f + (\beta_s \times ERP)$$

Table 7-5 uses the CAPM to estimate the return in excess of the riskless rate and compares this estimate to historical performance. According to the CAPM, the expected return on a security should consist of the riskless rate plus an additional return to compensate for the systematic risk of the security. The return in excess of the riskless rate is estimated in the context of the CAPM by multiplying the equity risk premium by β (beta). The equity risk premium is the return that compensates investors for taking on risk equal to the risk of the market as a whole (systematic risk).[3] Beta measures the extent to which a security or portfolio is exposed to systematic risk.[4] The beta of each decile indicates the degree to which the decile's return moves with that of the overall market.

A beta greater than one indicates that the security or portfolio has greater systematic risk than the market; according to the CAPM equation, investors are compensated for taking on this additional risk. Yet, Table 7-5 illustrates that the smaller deciles have had returns that are not fully explained by their higher betas. This return in excess of that predicted by CAPM increases as one moves from the largest companies in decile 1 to the smallest in decile 10. The excess return is especially pronounced for micro-cap stocks (deciles 9–10). This size-related phenomenon has prompted a revision to the CAPM, which includes a size premium. Chapter 4 presents this modified CAPM theory and its application in more detail.

Table 7-6: Size-Decile Portfolios of the NYSE/AMEX/NASDAQ
10th Decile Sub-Portfolios

Decile	Recent Number of Companies	Market Capitalization of Largest Company (in Thousands)	Company Name
10a	388	235,647	McClatchy Company
10w	221	235,647	McClatchy Company
10x	167	179,316	Furmanite Corporation
10b	1,294	143,379	Callon Petroleum Company
10y	304	143,379	Callon Petroleum Company
10z	990	85,670	Visteon Corporation

Note: These numbers may not aggregate to equal decile 10 figures.

Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2011 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission.

Market capitalization and name of largest company in each decile as of September 30, 2010.

This phenomenon can also be viewed graphically, as depicted in Graph 7-2. The security market line is based on the pure CAPM without adjustment for the size premium. Based on the risk (or beta) of a security, the expected return lies on the security market line. However, the actual historic returns for the smaller deciles of the NYSE/AMEX/NASDAQ lie above the line, indicating that these deciles have had returns in excess of that which is appropriate for their systematic risk.

Further Analysis of the 10th Decile

The size premia presented thus far do a great deal to explain the return due solely to size in publicly traded companies. However, by splitting the 10th decile into further size groupings we can get a closer look at the smallest companies. This magnification of the smallest companies will demonstrate whether the company size to size premia relationship continues to hold true.

Ibbotson first split the 10th decile into 10a and 10b in the 2001 Ibbotson SBBI Valuation Yearbook. In the 2010 Ibbotson SBBI Valuation Yearbook, we introduced an even closer look at the smallest companies by splitting 10a into 10w and 10x, and splitting 10b into 10y and 10z.

As previously discussed, the method for determining the size groupings for size premia analysis was to take the stocks traded on the NYSE and break them up into 10 deciles, after which stocks traded on the NYSE AMEX and NASDAQ were allocated into the same size groupings. This same methodology was used to split the 10th decile into four parts: 10w, 10x (sub-portfolios of 10a), and 10y, and 10z (sub-portfolios of 10b). Splitting the 10th decile into 10a and 10b is equivalent to breaking the stocks down into 20 size groupings, with portfolios 19 and 20 representing 10a and 10b. Further splitting 10a into 10w and 10x and 10b into 10y and 10z is equivalent to breaking the stocks down into 40 size groupings, with portfolios 37 and 38 representing 10w and 10x, and portfolios 39 and 40 representing 10y and 10z.

Table 7-7 shows that the pattern continues; as companies get smaller their size premium increases. There is a noticeable increase in size premium from 10a to 10b, and the portfolio made up of the smallest companies, 10z, has the largest size premium, which is demonstrated visually in Graph 7-3. This can be useful information in valuing companies that are extremely small. Table 7-6 presents the size, composition, and breakpoints of each size category. First, the recent number of companies and total decile market capitalization are presented for each of the portfolios. Then the market capitalization and name of the largest company is presented. Breaking the smallest decile down lowers the significance of the results compared to results for the 10th decile taken as a whole, however. There are always going to be more companies included in the Micro-cap than in the 10th decile, and more companies in the 10th decile than in the 10b category. The more stocks included in a sample, the more significance can be placed on the results. The 10th decile gets as small as 49 companies back in March of 1926. This is still significant.

While this is not as much of a factor with the recent years of data, these size premia are constructed with data back to 1926. By breaking the 10th decile down into smaller components we have cut the number of stocks included in each grouping. The change over time of the number of stocks included in the 10th decile for the NYSE/AMEX/NASDAQ is presented in Table 7-8. With fewer stocks included in the analysis early on, there is a strong possibility that just a few stocks can dominate the returns for those early years. While the number of companies included in the 10th decile for the early years of our analysis is low, it is not too low to demonstrate that the company size to size premia relationship continues to hold true, even when broken down into subdivisions 10a, 10w, 10x, 10b, 10y, and 10z.

All things considered, size premia developed for these portfolios are significant and can be used in cost of capital analysis. These size premia should greatly enhance the development of cost of capital analysis for very small companies.

Overlapping Size Categories

A common question among valuation practioners is about how to use the various size premium metrics that Morningstar provides when size-based category breakpoints overlap. This issue is magnified now that we have published even more granularity for the 10th decile.

There are going to be cases when the estimated equity value for a subject could categorize it in a number of size premium buckets. This range of potential size premium choices would have a tremendous effect on the firm's enterprise value. There are two decision paths when making this choice. The improper path is to choose the size premium that achieves the self-serving goal of influencing the enterprise value in the direction most desired. In many cases this leads to choosing the highest size premium number (12.06% in Table 7-7), because this will lead to the lowest enterprise value for tax purposes, marital dissolution, acquisition valuation, etc. The proper path is to choose the size premium that is most statistically relevant for your application.

Choosing the Right Size Premium

There are two primary factors in determining which size premium to use. First, identify how close to a size category boundary your subject company falls. Second, determine how confident you are in your estimate of equity value.

Let's say you have an example where the estimated equity value is close to the top breakpoint of the 10b category, toward the middle of the 10th decile, and toward the bottom of the Micro-cap. In this case, the statistically conservative choice is the 10th decile. We need to balance the confidence that our subject firm actually falls within a particular size category with the need to tailor that size grouping as tight as possible to make the peers relevant to our analysis. The Micro-cap category is too broad for this case, since the subject firm falls in the lower range of the category, and 10b is too narrow since our subject company would barely squeeze in under the top breakpoint before sliding into 10a. We can say with confidence that the 10th decile puts our company among the most peers of similar size.

Since estimating equity value for the purpose of size premium categorization is a circular challenge, it makes sense to use as many quality metrics that are available to perform this estimate. In doing so, you may find that the equity estimates cross a number of size premium categories. In this case, it is advisable to sacrifice granularity for statistical confidence. For example, if you have three equity estimates indicating that your firm would fall in the middle of 10x, bottom of 10x, and middle of 10y categories, the overall 10th decile size premium would be the best category to capture the size of similar peer companies while acknowledging that the imperfections and circular nature of the size bucketing process.

Table 7-7: Long-Term Returns in Excess of CAPM Estimation for Decile Portfolios of the NYSE/AMEX/NASDAQ, with 10th Decile Split

	Beta*	Arithmetic Mean Return (%)	Realized Return in Excess of Riskless Rate** (%)	Estimated Return in Excess of Riskless Rate† (%)	Size Premium (Return in Excess of CAPM) (%)
1	0.91	10.92	5.76	6.14	-0.38
2	1.03	12.92	7.76	6.95	0.81
3	1.10	13.56	8.39	7.39	1.01
4	1.12	13.91	8.75	7.55	1.20
5	1.16	14.75	9.59	7.77	1.81
6	1.19	14.95	9.78	7.96	1.82
7	1.24	15.38	10.21	8.34	1.88
8	1.30	16.54	11.37	8.73	2.65
9	1.35	17.16	11.99	9.05	2.94
10a	1.42	19.24	14.08	9.53	4.55
10w	1.39	18.52	13.35	9.36	3.99
10x	1.45	19.88	14.72	9.75	4.96
10b	1.38	24.46	19.30	9.24	10.06
10y	1.40	23.72	18.55	9.40	9.15
10z	1.34	26.25	21.08	9.03	12.06
Mid-Cap, 3-5	1.12	13.87	8.71	7.51	1.20
Low-Cap, 6-8	1.23	15.38	10.22	8.24	1.98
Micro-Cap, 9-10	1.36	18.37	13.20	9.12	4.07

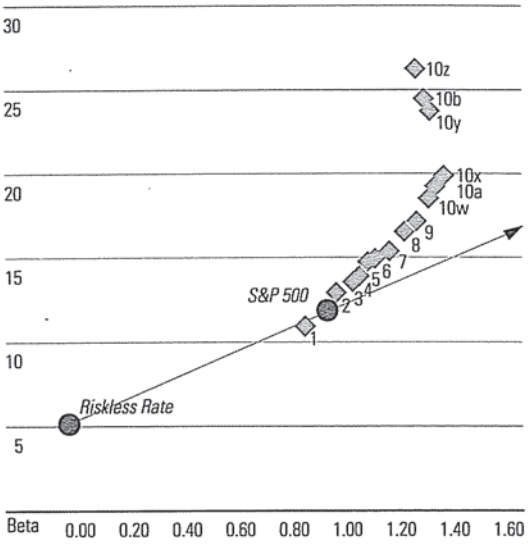
Data from 1926–2010. Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2011 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission.

*Betas are estimated from monthly portfolio total returns in excess of the 30-day U.S. Treasury bill total return versus the S&P 500 total returns in excess of the 30-day U.S. Treasury bill, January 1926–December 2010 .

**Historical riskless rate is measured by the 85-year arithmetic mean income return component of 20-year government bonds (5.17 percent).

†Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the S&P 500 (11.88 percent) minus the arithmetic mean income return component of 20-year government bonds (5.17 percent) from 1926–2010.

Graph 7-3: Security Market Line versus Size-Decile Portfolios of the NYSE/AMEX/NASDAQ, with 10th Decile Split



Data from 1926–2010.

Table 7-8: Historical Number of Companies for NYSE/AMEX/NASDAQ Decile 10

Sept.	Number of Companies
1926	52*
1930	72
1940	78
1950	100
1960	109
1970	865
1980	685
1990	1,814
2000	1,927
2005	1,746
2006	1,744
2007	1,775
2008	1,626
2009	1,415
2010	1,320

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*The fewest number of companies was 49 in March, 1926

Alternative Methods of Calculating the Size Premia

The size premia estimation method presented above makes several assumptions with respect to the market benchmark and the measurement of beta. The impact of these assumptions can best be examined by looking at some alternatives. In this section we will examine the impact on the size premia of using a different market benchmark for estimating the equity risk premia and beta. We will also examine the effect on the size premia study of using sum beta or an annual beta.[5]

Changing the Market Benchmark

In the original size premia study, the S&P 500 is used as the market benchmark in the calculation of the realized historical equity risk premium and of each size group's beta. The NYSE total value-weighted index is a common alternative market benchmark used to calculate beta. Table 7-9 uses this market benchmark in the calculation of beta. In order to isolate the size effect, we require an equity risk premium based on a large company stock benchmark. The NYSE deciles 1–2 large company index offers a mutually exclusive set of portfolios for the analysis of the smaller company groups: mid-cap deciles 3–5, low-cap deciles 6–8, and micro-cap deciles 9–10. The size premia analyses using these benchmarks are summarized in Table 7-9 and depicted graphically in Graph 7-4.

Table 7-9: Long-Term Returns in Excess of CAPM Estimation for Decile Portfolios of the NYSE/AMEX/NASDAQ, with NYSE Market Benchmarks

	Beta*	Arithmetic Mean Return (%)	Realized Return in Excess of Riskless Rate** (%)	Estimated Return in Excess of Riskless Rate† (%)	Size Premium (Return in Excess of CAPM) (%)
1	0.99	10.92	5.76	5.91	-0.15
2	1.11	12.92	7.76	6.66	1.10
3	1.17	13.56	8.39	7.02	1.38
4	1.20	13.91	8.75	7.19	1.56
5	1.23	14.75	9.59	7.36	2.22
6	1.26	14.95	9.78	7.53	2.25
7	1.32	15.38	10.21	7.88	2.33
8	1.38	16.54	11.37	8.25	3.12
9	1.42	17.16	11.99	8.52	3.46
10	1.48	20.97	15.81	8.87	6.94
Mid-Cap, 3-5	1.19	13.87	8.71	7.13	1.58
Low-Cap, 6-8	1.30	15.38	10.22	7.79	2.43
Micro-Cap, 9-10	1.43	18.37	13.20	8.58	4.61

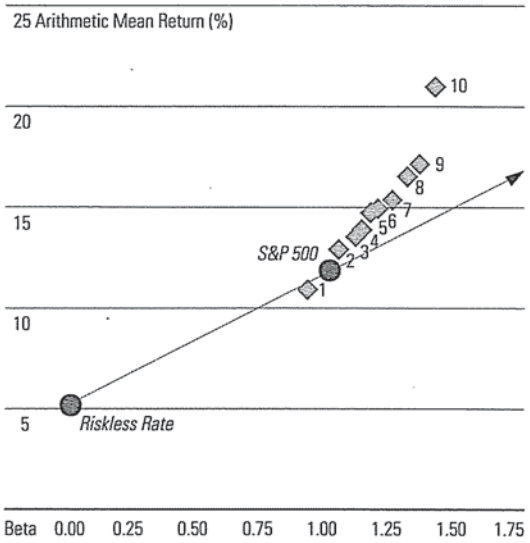
Data from 1926–2010. Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2011 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission.

*Betas are estimated from monthly portfolio total returns in excess of the 30-day U.S. Treasury bill total return versus the CRSP Deciles 1–2 total returns in excess of the 30-day U.S. Treasury bill, January 1926–December 2010 .

**Historical riskless rate is measured by the 85-year arithmetic mean income return component of 20-year government bonds (5.17 percent).

†Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the CRSP Deciles 1–2 (11.15 percent) minus the arithmetic mean income return component of 20-year government bonds (5.17 percent) from 1926–2010.

Graph 7-4: Security Market Line versus Size-Decile Portfolios of the NYSE/AMEX/NASDAQ, with NYSE Market Benchmarks



Data from 1926–2010.

For the entire period analyzed, 1926–2010, the betas obtained using the NYSE total value-weighted index are higher than those obtained using the S&P 500. Since smaller companies had higher betas using the NYSE benchmark, one would expect the size premia to shrink. However, as was illustrated in Chapter 5, the equity risk premium calculated using the NYSE deciles 1–2 benchmark results in a value of 5.99, as opposed to 6.72 when using the S&P 500. The effect of the higher betas and lower equity risk premium cancel each other out, and the resulting size premia in Table 7-9 are slightly higher than those resulting from the original study.

Measuring Beta with Sum Beta

The sum beta method attempts to provide a better measure of beta for small stocks by taking into account their lagged price reaction to movements in the market. [See Chapter 6.] Table 7-10 shows that using this method of beta estimation results in larger betas for the smaller size deciles of the NYSE/AMEX/NASDAQ while those of the larger size deciles remain relatively stable. From these results, it appears that the sum beta method corrects for possible errors that are made when estimating small company betas without adjusting for the lagged price reaction of small stocks. However, the sum beta, when applied to the CAPM, still does not account for all of the returns in excess of the riskless rate historically found for small stocks. Table 7-10 demonstrates that a size premium is still necessary to estimate the expected returns using sum beta in conjunction with the CAPM, though the premium is smaller than that needed when using the typical calculation of beta.

Graph 7-5 compares the 10 deciles of the NYSE/AMEX/NASDAQ to the security market line. There are two sets of decile portfolios—one set is plotted using the single variable regression method of calculating beta, as in Graph 7-2, and the second set uses the sum beta method. The portfolios plotted using sum beta more closely resemble the security market line. Again, this demonstrates that the sum beta method results in the desired effect: a higher estimate of returns for small companies. Yet the smaller portfolios still lie above the security market line, indicating that an additional premium may be required.

Table 7-10: Long-Term Returns in Excess of CAPM Estimation for Decile Portfolios of the NYSE/AMEX/NASDAQ, with Sum Beta

	Beta*	Arithmetic Mean Return (%)	Realized Return in Excess of Riskless Rate** (%)	Estimated Return in Excess of Riskless Rate† (%)	Size Premium (Return in Excess of CAPM) (%)
1-Largest	0.91	10.92	5.76	6.13	-0.37
2	1.06	12.92	7.76	7.09	0.66
3	1.13	13.56	8.39	7.60	0.79
4	1.20	13.91	8.75	8.05	0.69
5	1.24	14.75	9.59	8.30	1.29
6	1.30	14.95	9.78	8.73	1.05
7	1.38	15.38	10.21	9.27	0.94
8	1.49	16.54	11.37	10.04	1.34
9	1.56	17.16	11.99	10.45	1.54
10-Smallest	1.71	20.97	15.81	11.47	4.34
Mid-Cap, 3-5	1.17	13.87	8.71	7.86	0.84
Low-Cap, 6-8	1.36	15.38	10.22	9.16	1.05
Micro-Cap, 9-10	1.60	18.37	13.20	10.74	2.46

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*Betas are estimated from monthly portfolio total returns in excess of the 30-day U.S. Treasury bill total return versus the S&P 500 total returns in excess of the 30-day U.S. Treasury bill, January 1926–December 2010.

**Historical riskless rate is measured by the 85-year arithmetic mean income return component of 20-year government bonds (5.17 percent).

†Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the S&P 500 (11.88 percent) minus the arithmetic mean income return component of 20-year government bonds (5.17 percent) from 1926–2010.